Mallaig Outer Harbour Improvements

Construction Traffic Management Plan

MALLAIG HARBOUR AUTHORITY

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Contents

1 Introduction

This Construction Traffic Management Plan (CTMP) has been prepared by Affric Limited on behalf of Mallaig Harbour Authority (MHA) for the proposed Mallaig Outer Harbour Improvements (MOHI) development. The objective of this report is to describe the anticipated effects of construction related vehicle movements on traffic, transport and access along the site access routes. Mitigation measures are also proposed to minimise the effects of construction movements on the local transport network.

2 Project Information

MHA are proposing to construct a new splay berth and deepen the waters within the Outer Harbour area of Mallaig Harbour. The development, including the deepening, will cover a total area of 33,000m^2 and will provide additional berthing space, operational quayside, and laydown space, primarily for the fishing and aquaculture sectors. The harbour improvements will accommodate an increased number of vessels and the dredge will allow for deeper draughted vessels, including well boats, to enter the Outer Harbour in all tide states.

Mallaig is located at the end of the A830 trunk road, and there is only one minor road heading further north terminating less than 2km from the Harbour. As such, materials including cement, aggregates and steel required to complete the works, will all be delivered to the site utilising the A830 from the direction of Fort William. Construction traffic will use the minor harbour roads to reach the construction area from the A830. For a full project description and list of components please refer to Section 4 of the MOHI Supporting Document (Affric Limited, 2021).

3 Regulations and Guidance

Although this document does not constitute a full traffic impact assessment, the broad principles outlined in the following documents have been adhered to:

- Roads and Transport Guidelines for New Developments (The Highland Council, 2013); and
- Guidance on the Preparation of Transport Assessments (The Highland Council, 2014).

Additional relevant regulation and guidance includes, but is not limited to:

- Road Traffic Act 1988 as amended; and
- The Highway Code.

For a full description of the statutory context around the proposed development, please refer to Section 3 of the Supporting Document (Affric Limited, 2021).

4 Methodology

4.1 Baseline

The physical characteristics of the A830 were identified based on mapping, site visits and stakeholder dialogue.

Due to the COVID-19 pandemic, no project specific traffic counts were conducted along the A830. Even if it was logistically possible to carry out such counts, the restrictions on travel would have skewed the results and made the data unrepresentative of normal years. To establish the magnitude of the existing traffic flows, count data for four points along the road were obtained from the Department for Transport's Road Traffic Statistics website (Department for Transport, 2021). The locations of these points are shown in Figure 4.1. The data for three of the points are based on manual counts, conducted in 2008 (site numbers 30799 & 50729) and 2006 (site number 80850). The counts for the subsequent years were produced by applying a scaling factor to these values. Information for count site number 80851, located on the A830 around 1.4km south of Mallaig is estimated from an automatic count made in 2019. All of these counts are presented in the form of the annual average daily flow (AADF), which is generated from the raw count data. A modal breakdown of the motor traffic utilising the road is captured by this data, as is information on the directional flow of each of the vehicle classes.

Figure 4.1: Traffic Count Locations on the A830

The 2020 estimates by the Department of Transport are lower than the previous five years, presumably to take account of COVID. As 2020 is not a typical year these figures have not been utilised in the assessment. As the 2019 AADF figures for three of the count points are scaled from manual counts there is no advantage in utilising a five-year average number for these. Hence, 2019 ADDF have been utilised for these three count points and the count point based on an automatic count as the baseline for traffic flow.

Accident data made available through the CrashMap UK website was used to establish the presence of accident clusters along the A830 (CrashMap, 2021).

4.2 Identification of Receptors

Details of the development design and construction plans, including the volumes of construction traffic expected and the site access routes, were sought to inform the CTMP. This information, along with the baseline data, allowed receptors which are potentially sensitive to traffic impacts arising from the construction stage to be identified. Mapping was also used to conduct a review of specific sensitive receptors (i.e. schools, hospitals, care homes) along the A830 that had the potential to be negatively impacted by construction traffic.

4.3 Mitigation

Where it was deemed likely that traffic associated with construction would give rise to a negative effect on any of the sensitive receptors, appropriate mitigation was identified. The mitigation measures outlined in the CTMP aim to eliminate or reduce the potential negative effects.

5 Baseline Conditions

5.1 Road Network

The A830 trunk road is the primary route by which road traffic can reach the town of Mallaig. The road begins at a roundabout connecting it to the A82 in Fort William. It stretches westwards for approximately 74km and passes through several villages, including Corpach, Glenfinnan and Arisaig, and bypasses the village of Morar. It terminates at the quayside at Mallaig Harbour, where road users can catch ferry services to the isles of Muck, Eigg, Rum, Canna and Skye, and a ferry to the neighbouring Knoydart peninsula at Inverie. The A830 is classed as a trunk road due to providing a connection to these lifeline ferry links. It therefore accommodates a relatively large volume of traffic, including HGVs associated with the fisheries sector and cargo deliveries to and from the islands. The marina within Mallaig Harbour serves as a stopover for sail boats and pleasure crafts. Mallaig is often used as a base from which sailboats can explore the nearby islands and foot passenger ferries also operate from the harbour.

The A830 accommodates traffic in both directions, with the final stretch of single-track carriageway being upgraded in 2009. There are however still three short sections where the road narrows to a single lane to pass under railway bridges. The first of these is located approximately 5km east of Arisaig and is controlled by traffic lights. The second is 6km east of Arisaig where a give-way system is in place, and the third is 3km east of Glenfinnan with no traffic control system in place.

There are a series of minor roads within the harbour area. These join the A830 at junctions next to the ferry car parking area and at the roundabout at the harbour entrance. These roads are lined by harbour buildings and storage areas, warehouses and commercial properties.

5.2 Traffic Conditions

Table 5.1 provides a summary of the modal breakdown of the AADF traffic count data for the four traffic count points along the A830 (see Figure 4.1 for their locations).

At all four count points in 2019 it was found that cars made up the majority of motor vehicles utilising the A830, comprising around two thirds of all motor vehicles. There is considerable difference between the AADF of HGVs recorded at each of the count points. The highest figure

is 171, which was recorded at the furthest east point, just west of Kinlocheil. Lower numbers are noted from the count point closest to Mallaig, with only 80 noted as travelling past this point daily. HGVs make up between 4-8% of the total number of motor vehicles at the four count points.

Table 5.1: Modal Breakdown of 2019 Traffic Figures for A830

Count Point	Pedal Cycles	Motorbikes	Cars	Coaches	LGVs	HGVs	Total Motor Vehicles
30799 A830 west of Kinlocheil	1	28	1427	31	584	171	2241
50729 A830 west of Loch Eilt	1	37	1023	33	352	78	1524
80850 A830 east of the Loch Nan Uamh viaduct	5	52	991	28	265	109	1444
80851 A830 south of Mallaig	24	24	1321	56	313	80	1793

Table 5.2 shows the directional breakdown of traffic along the A830 from the 2019 data. There is very little difference between the total counts for vehicles travelling in the westbound (towards Mallaig) and eastbound (towards Fort William) directions at each of the count points.

Table 5.2: Directional Breakdown of 2019 Traffic Figures for A830

Count Point	Westbound Traffic	Eastbound Traffic	Total Motor Vehicles
30799 A830 west of Kinlocheil	1122	1119	2241
50729 A830 west of Loch Eilt	781	743	1524
80850 A830 east of the Loch Nan Uamh Viaduct	703	741	1444
80851 A830 south of Mallaig	915	878	1793

The nature of the traffic count data did not allow peak traffic flow times along the A830 to be identified. The fish processing facility at the harbour operates overnight, with fish being transferred by HGV during the night from Mallaig to Fort William. Hence it is known that a proportion of the HGV traffic is during the night.

It is anticipated that the busiest, and thus most sensitive, times occur when vehicle ferries are discharging from the harbour. Traffic disembarking from the ferry and heading south is likely to travel in a convoy. When at full capacity, it takes approximately 15 minutes to clear the harbour area of vehicles from the largest ferries onto the A830. All vehicles sailing from Mallaig must be ready for departure typically no later than 20 minutes prior to the sailing times, and the arriving ferry traffic is spread out over a much longer time period than the

departing vehicles. There is therefore no overlap between traffic arriving at the harbour and vehicles departing the town to the south.

5.3 Road Safety

From 2016-20 there were 22 slight incidents along the A830 that generated a police report. In addition, 6 serious and 2 fatal accidents were recorded on the road during this time period (CrashMap, 2021). The baseline data shows no major accident clusters or areas of particular safety concern along any stretches of the A830.

5.4 Pedestrians

At present there are not believed to be any major issues around pedestrian safety within Mallaig. It is acknowledged however that the harbour area and the streets surrounding it can become very busy at certain times of year, notably in the summer months during the peak tourist season and during school/bank holidays. There is a pelican crossing on the A830 approximately 10m south-west of the roundabout at Mallaig Harbour and a series of zebra crossings across the A830 and the minor roads within the harbour area that allow pedestrians to cross. These crossings provide a convenient route for those walking from Mallaig Train Station to the harbour. They also provide crossing points from the car parking area to the west of the A830 into the village.

Another potentially sensitive location is at Glenfinnan, where a popular pedestrian path crosses the A830. Pedestrians do not have right of way at it. The Glenfinnan crossing is particularly busy during the tourist season with pedestrians crossing from the monument to the south of the road to the viaduct, parking and visitor centre to the north.

The A830 also passes through the villages of Corpach and Arisaig, where 30mph speed limits are in place. Residential properties and pedestrian footpaths are present alongside the road through these settlements.

5.5 Committed Development

A review of the THC's ePlanning website on 4th of October 2021 (The Highland Council, 2021) found no major planning applications have been granted permission within Mallaig or along the A830 in the last 2 years that are expected to increase the volume of traffic utilising the road. The potential construction traffic associated with any of the planning applications is not expected to significantly increase traffic levels in the region during the course of the MOHI development.

5.6 Sensitive Receptors

Several receptors were identified that are potentially sensitive to impacts caused by construction and material delivery traffic within Mallaig and along the A830. These receptors include:

- Pedestrians at the Glenfinnan crossing;
- Pedestrians in Mallaig;
- Drivers on the A830; and
- Ferry traffic.

There were not found to be any schools, hospitals, care homes or other notable services along the A830 that have the potential to be directly impacted by construction traffic. Within Mallaig

there are no residential properties to the west of the A830. The primary and secondary schools in the village are both located to the east of the road, and so pedestrians and drivers accessing the schools are unlikely to be impacted by construction traffic.

6 Construction Traffic Generation

The construction phase of the development is anticipated to last a period of 18 months (76 weeks). The indicative construction programme shows the overlapping tasks, timescales and traffic implications in more detail, as shown in Figure 6.1. The actual programme will be developed by the construction contractor once they are appointed.

ID	Name	Duration
1	Site Mobilisation / Compound Set up	2w
2	Set up temporary ice/ fuel/ water measures	1w
3	Set up Vibration Monitoring / Environmental Mitigation Measures	1w
4	Drill cut off trench/pre-split around structure walls and splay quay	8w
5	Blast cut off trench / survey and remove any high spots	8w
6	Drill & Blast main area of rock in OH basin	24w
7	Install grout around toe of existing Outer Breakwater Quay Sheet Piles	6w
8	Dredge blasted rock for shore reclamation	10w
9	Dredge excess blasted rock for sea disposal or onshore use (as required)	10w
10	Dredge soft material from harbour entrance and take to disposal site.	10w
11	Dive on quay wall toes. Carry out remedial works to sheet piles	12w
12	Install Scour Mats along quay wall toes	4w
13	Carry out any remedial works to quay surfaces	12w
14	Remove armour from top of existing slopes	2w
15	Install OB Quay piled return wall	4w
16	Remove armour toe to the front of piled return wall and last of dredge	4w
17	Install dock and Fender piles, with odex spigots and grout.	20w
18	Install new ferry lay up berth and fenders	8w
19	Construct concrete toe beam with inserts to allow front pile installation	4w
20	Install rock armour	8w
21	Construct suspended concrete deck slab	12w
22	Drill and install tension anchors	4w
23	Install drainage pipework. Intereceptor and manholes	4w
24	Install fenders and quay furnitures	4w
25	Completion 6F and Type 1 to reclamation	2w
26	Move generator. Install service trench,	6w
27	Install lighting columns and electrical works	4w
28	Install water pipes	4w
29	Kerb and surfacing works at road junction	3w
30	Project Completion & Hand over	3w

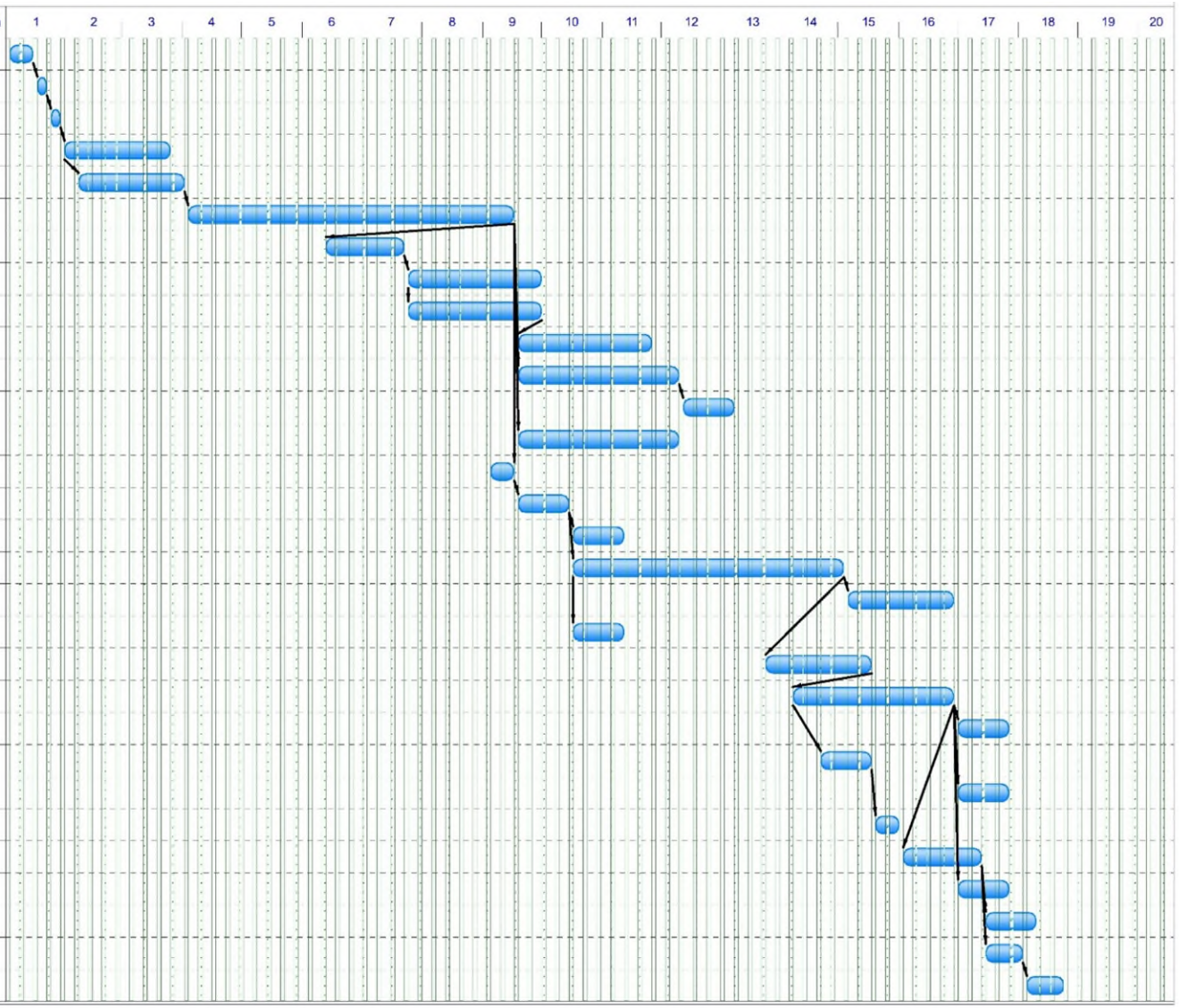

Figure 6.1: Indicative Construction Programme

6.1 Site Access

Construction traffic and material deliveries will arrive to the site from the south via the A830 without utilising other streets in the village. They will travel straight over at the roundabout at the entrance to the harbour before turning left along a harbour road through the harbour to reach the site compound (Figure 6.2). Vehicles will exit the site right onto another harbour road before performing two left turns to reach the roundabout adjoining the A830. This route will negate the need for HGVs to perform right turns at junctions across oncoming traffic. There will be no requirement for construction traffic to travel down any residential streets within Mallaig, thus minimising disruption to residents and road traffic users in the village.

Figure 6.2: Access Route for Construction Traffic Entering/Leaving Site

6.2 Construction Traffic Volumes

A number of HGV loads will be required during the construction period, including low loaders and cement mixer trucks for the delivery of construction materials. Materials needed for construction include aggregates for infill, rock armouring and surfacing. A portion of the aggregates will be site-won from the dredge but the rest will be imported by road. As detailed in Table 6.1, it is estimated that approximately 1789 HGV trips (3578 movements, to or from site) would occur during the construction of the project. This is an estimate based on the total tonnages of materials required and the loading capacity of the vehicles that will be used for transport.

The greatest volume of HGV traffic will be generated when concrete deliveries for the deck slab and rock armour deliveries overlap. This will give rise to an estimated 18 trips (36 movements a day) for an approximately 6-week period.

All of the material deliveries will arrive in Mallaig from the A830 in the south of the town. The ready-mix concrete deliveries are anticipated to come from Banavie Quarry on the western outskirts of Fort William. For the purpose of assessment, it has been assumed that an equal split between precast and ready-mix concrete will be utilised. The majority of the other materials listed in Table 6.1 will be sourced from the Fort William area, although it is noted that items such as geotextiles may come from further afield. There is a potential that some deliveries will be by sea, in particular metal components such as piles and fenders. However for the purpose of assessment it has been pessimistically assumed all materials will be delivered by road.

It is anticipated that suitable material arising from the dredge will be re-used within the MOHI development. A proportion of the material that is surplus to the requirements of this development may be re-used in other local projects where the material is suitable and reuse is feasible. Seawater will be allowed to drain from the dredge material before loaded onto trucks to ensure water is not tracked out onto the local road network. Ideally, this material will be delivered straight to the project that requires it. If this is unfeasible, then it will be delivered to a location as close as possible to Mallaig for storage prior to re-use. HGV movements delivering material to these projects will have occurred regardless of the MOHI development and are substitutions rather than additions. They have therefore not been included in the construction traffic generation calculations or included in Table 6.1.

Table 6.1: Estimated HGV Trip Generation Throughout the Construction Programme

Material	Removal/ Delivery	Quantity in Tonnes (except specified otherwise)	Time Frame (Weeks)	Assumed Capacity (Tonnes)	No. of HGV Trips	Trips per day
Plant and Machinery	Delivery and Removal	10 plant items	2 (but not consecutive)	1 item	20	2.0
Steel / Iron	Delivery	1,350	4	20	68	3.4
Timber	Delivery	220	4	20	11	0.6
Concrete (precast)	Delivery	6,750	32	20	338	2.1
Concrete (ready-mix)	Delivery	6,750	32	8	844	5.3
Aggregate	Delivery	10,000	10	20	500	10.0
Plastic	Delivery	20 3,300m^2 geotextile 1,200m pipe	4	20	8	0.4
Total			**76**		**1789**	**3.4**

6.3 Personnel Transport and Parking

It is estimated that on average there will be 20-30 construction workers required over the 76-week construction period. The number of construction workers on site on any one day will be specific to the activity being carried out at that time. It would be hoped that there will be at least some element of local residents involved in the construction works but this cannot be assumed. Hence there could be 30 people travelling to Mallaig either daily or weekly depending on where they live. For the purpose of assessment, it is assumed that there will be 15 vehicles trips per day along the A830 associated with construction workers, this takes account of some degree of car sharing, local work force and use of public transport (bus or train).

7 Construction Considerations

The percentage increase in HGV and car movements at each of the count point locations on the A830 are detailed in Table 7.1. Assuming an average of ~10 additional daily HGV movements throughout the construction phase, the average increase from baseline levels ranges from 5-13% between the four count points. Due to their existing lower baseline vehicle numbers, as detailed in Table 5.1, the greatest increases will be experienced on the A830 just south of Mallaig and west of Loch Eilt. The lowest increase will be at the furthest east point to the west of Kinlocheil. The approximately 6-week period when concrete and rock armour deliveries overlap has the potential to add a maximum of 36 additional daily HGV movements along the A830 during this period. The maximum percentage increase in HGV traffic will vary from 21-46% along the A830 for this temporary period. This has the potential to have a temporary negative effect on traffic and pedestrian receptors along the A830 if not managed appropriately.

The movement of 15 construction personnel in individual cars to and from Mallaig daily would give rise to an imperceivable effect on car movements along the A830. The percentage increase ranges from 2-3% at each of the count points.

Table 7.1: Percentage Increase in HGV and Car Movements

Count Point Location	Average HGV Increase (%)	Peak HGV Increase (%)	Average Car Increase (%)
30799 A830 west of Kinlocheil	5.8	21.1	2.1
50729 A830 west of Loch Eilt	12.8	46.2	2.9
80850 A830 east of the Loch Nan Uamh Viaduct	9.2	33.0	3.0
80851 A830 south of Mallaig	12.5	45.0	2.3

7.1 Driver Delay

This increased level of heavy traffic on the road has the potential to cause driver delay along the A830. Traffic travelling in both directions has the potential to be held up by slow-moving HGVs heading to and from the construction site. The impact would be particularly acute should HGVs leave the site just before or during ferry disembarkation times. In this case large volumes of vehicles travelling in a convoy could be held up whilst leaving Mallaig along the A830.

As detailed in Section 6.2, a temporary daily increase of 18 HGV trips for up to 6 weeks is anticipated on the A830 when concrete and rock armour deliveries overlap. As noted in Section 5.2, a proportion of the existing HGV traffic on the A830 travels at night. The vehicles associated with the MOHI development, which will be utilising the A830 during the day, will therefore not be adding as much additional pressure to the road network as these figures may suggest.

7.2 Accidents and Safety

The increase in HGVs along the A830 has the potential to increase the risk of road accidents. The three short stretches where the road narrows to pass under railway bridges have the greatest potential for this to occur, particularly the section 3km east of Glenfinnan where no traffic control system is in place. Slow-moving HGV traffic may cause tailbacks and driver frustration if not appropriately managed. This also has the potential to increase the risk of road accidents along the A830 by increasing the frequency of overtaking manoeuvres.

Pedestrian safety also has the potential to be impacted by the increase in HGV traffic through an increased chance of vehicle-pedestrian interactions. As detailed in Section 5.4, the series of zebra and pelican pedestrian crossing points around the harbour area, villages along the A830 and the crossing at Glenfinnan are locations where pedestrians are likely to cross the road. It is recognised that visitors to an area are less like to be aware of local hazards and may be distracted while crossing the road. As such, there is a need for all driver to be vigilant especially during the tourist season to avoid vehicle pedestrian interaction.

7.3 Pedestrian Delay, Amenity and Intimidation

Pedestrian delay, reduced pedestrian amenity, and fear & intimidation may potentially arise as a result of the increased volume of HGVs in Mallaig and along the A830. As above, pedestrians within Mallaig, the villages along the A830 and those at Glenfinnan that come into closest contact with the A830 will be most sensitive to these impacts.

Pedestrian delay may occur at Glenfinnan and in villages away from designated crossing points. Pedestrians do not have right of way at these locations and may have to wait for HGVs to pass before crossing. Increased HGV traffic may also reduce amenity and increase intimidation, the severity of which is dependent on the volume of HGVs and proximity to pedestrians. Due to the relatively small increase in HGV and car movement associated with construction of the MOHI development, no significant effects on pedestrian delay, amenity or intimidation are anticipated.

8 Construction Phase Mitigation

To minimise the temporary negative impact of the increased volume of HGV traffic on A830 traffic, ferry traffic and pedestrian receptors, several mitigation measures have been identified. All HGV and delivery traffic associated with the construction phase of the development will:

- Adhere to The Road Traffic Act 1988 as amended, and the Highway Code;
- Avoid leaving site during vehicle ferry disembarkation times;
- Not travel in a convoy along public roads;
- Only utilise the agreed site access routes;
- Adhere to public road and site speed limits;
- Be encouraged to allow overtaking on public roads; and
- All drivers will be briefed on the above mitigation and the sensitivities along the route, including:
    - The location of pedestrian crossings, including the pelican/zebra crossings in Mallaig and the crossing at Glenfinnan;
    - Sensitive areas, such as through villages and around Glenfinnan where it may be appropriate to reduce speed lower further; and
    - The location of the single-track railway bridge underpasses.

If Covid-19 restrictions allow, all personnel directly involved with the construction works on-site will be encouraged to utilise local train or bus links or travel together in vehicles where practicable to minimise transport impacts. The construction compound will include parking provision for workers to ensure no disruption to the local parking facilities in Mallaig.

9 Conclusion

The construction of the MOHI development will result in a temporary increase in HGV traffic along the A830. However, it is not expected to be a significant increase above baseline levels, with an average 10 additional daily HGV movements along the road anticipated. This is estimated to rise to 36 additional daily HGV movements for an approximately 6-week period when concrete and rock armour deliveries overlap. The mitigation measures identified in Section 8 will reduce any negative effects on traffic and pedestrian receptors to an acceptable level and minimise disruption as far as practically possible throughout construction.

10 References

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11 Glossary

Acronym	Definition
AADF	Annual Average Daily Flow
CTMP	Construction Traffic Management Plan
HGV	Heavy Goods Vehicle
km	kilometres
m	metres
MHA	Mallaig Harbour Authority
MOHI	Mallaig Outer Harbour Improvements