The Hurlstone Partnership

PROPOSED RECYCLING OPERATIONS AT MACHEN QUARRY, NEWPORT, CAERPHILLY CF83 8YP

Transport Statement

September 2024

JPH/240801/D3

Seven Oaks Farm, Crew Green, Shrewsbury SY5 9AS

Tel: 01743 884849 Fax: 01743 884947 e-mail: office@hurlstones.com

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Document Status – 3rd Draft

Produced by: - - - - - - J P Hurlstone Date: September 2024

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1 INTRODUCTION

1.1 Heidelberg Materials UK operates Machen Quarry, which is located on the eastern fringe of Machen Village, approximately 9km west of Newport. Machen Quarry predominantly produces limestone aggregates, which are distributed from the site either by rail via the on-site sidings, or road using HGVS.

1.2 The site also historically produced asphalt and concrete, but these plants have now been decommissioned and removed.

1.3 There have, in the past, been three planning permissions granted for aggregates recycling operations at Machen Quarry. Permissions for the recycling of construction and demolition (C&D) waste (including road planings) were granted in 2010 and 2014 but have since lapsed. A third permission granted in 2019, exclusively for the production of recycled asphalt products (RAP), remains extant.

1.4 Planning permission is sought for the processing and recycling of C&D waste in addition to the RAP within Machen Quarry. The production of recycled aggregates for re-use in construction projects reduces the consumption of primary aggregates whilst also minimising the volume of materials that would otherwise be sent to landfill.

1.5 An eventual processing figure of 250,000 tonnes per annum had been identified for the combined volumes of C&D waste and RAP. Due to the source of the raw materials and the anticipated destination of recycled products it is likely that all of the imports and exports would be transported by road.

1.6 The proposed recycling operations and storage areas would be accessed via the existing, approved Machen Quarry access on the A468, with traffic being distributed to the west to / from Caerphilly and east to / from Newport and beyond.

1.7 The Hurlstone Partnership Limited was instructed to prepare a Transport Statement to consider the acceptability of the proposed development in terms of its impact on the highway network.

1.8 The remainder of this report details the findings of the review and confirms that the cumulative traffic flows with the proposed development in place would remain below levels previously accommodated on the A468. Given the satisfactory access to the site and the ability of the road network to accommodate the proposed traffic activity, the impact of the proposed development on the local road network is deemed to be acceptable.

2 EXISTING SITUATION

Site Access

2.1 Machen Quarry is served by an approved existing access on the north side of the A468 extending approximately 22m along the road edge. The access bellmouth is contiguous with that of a neighbouring access to the east serving the residential property known as "The Volland".

2.2 The access is located on the outside of a slight bend, which provides good visibility in both directions from and towards turning traffic.

2.3 The access is constructed in a sealed asphalt surface and subject to a 15 mph speed limit. The route also provides access to Park Farm and Park Farm Cottages, which lie to the southeast of the quarry. These properties are located to the northeast of the turn into Machen Quarry, which is approximately 150m from the A468.

2.4 The length of the route serving Machen Quarry has been widened and improved to accommodate the HGV traffic associated with the site. The continuation of the route beyond the quarry entrance towards Park Farm is a single track lane accessed over a cattle grid.

Existing Traffic Flows

2.5 Traffic data on the A468 has been obtained from the DfT Road Traffic Statistics website, which provides details of traffic movements on many roads within the UK. There are two Count Points near the access to Machen Quarry; one to the west and one to the east, from which data has been obtained.

2.6 The most recent 2023 Annual Average Daily Flow (AADF), which is the average daily flow over the whole year, from Count Point 10578, approximately 1.7 km to the east of Machen Quarry access (co-ordinates 51.58394000, -3.10196030) is 7019 vehicles including 348 HGVs.

2.7 Data is also available back to 2000, which revealed an AADT flow of 7500 vehicles including 867 HGVs in 2000. The highest HGV flow at this Count Point was published in 2004, with an average of 936 per day within an overall total flow of 7970 vehicles. The highest overall traffic flow of 8954 vehicles including 662 HGVs was published for 2015.

2.8 At Count Point 78430, approximately 2.65 km to the west of the site access, between Machen and Graig-Y-Rhacca (co-ordinates 51.59378500, -3.15627750), the published 2023 AADF is 9145 vehicles including 427 HGVs. In 2000, the published AADF flow was 10,529 vehicles including 745 HGVs, which represents the highest average daily HGV flow within the range provided. The highest published AADF was 11,602 vehicles including 617 HGVs in 2007.

Highway Safety

2.9 Review of the Crashmap website revealed there have been no recorded Personal Injury Accidents (PIAs) within the most recent 7 year period available (2016 – 2022) inclusive, which demonstrates the access is suitable to accommodate the routine movements by HGVs associated with the site.

2.10 Normally, a five year assessment period is undertaken, but in this case an additional two years have been added due to the reduced travel activity during the Covid 19 pandemic, to provide five years of representative data.

2.11 A review was also undertaken along the A468 to the west toward Caerphilly and east towards Newport for the same period, concentrating on HGVs over 7.5 tonnes, which are typically associated with the transporting of minerals. This revealed the A468 is of a suitable standard to accommodate such vehicles, given the absence of accident clusters that are normally found in the event there is a feature of the road network that compromises safety for its users.

3 PROPOSED DEVELOPMENT

3.1 The proposed development comprises the reintroduction of the processing and recycling of Construction and Demolition (C&D) Waste in addition to the approved Recycled Asphalt Products (RAP).

3.2 Under the proposed development, materials arising from construction projects would be imported to the site prior to being processed to remove recyclable products. The process would produce recycled aggregates for re-use in construction projects. Any products that could not be recycled would be transported off site for final disposal.

3.3 The proposed operations would take place within the existing Machen Quarry site and would be served via the existing access to the A468, along which the HGVs carrying materials would travel.

3.4 The proposed imports, exports and processing would take place within the permitted working hours of Machen Quarry.

3.5 An eventual processing figure of 250,000 tonnes per annum has been identified for the combined volumes of C&D waste and RAP. Of this total it is anticipated that around 30% / 75,000 tonnes would be RAP, with the remaining 70% / 175,000 tonnes being C&D waste.

3.6 Of the C&D waste, it is anticipated that approximately 20% to 25%, which equates to 35,000 to 43,750 tonnes of recycled products, would replace primary aggregates currently exported from the site, with a corresponding reduction in the associated traffic movements.

3.7 In terms of market distribution, it is anticipated that over a year the directional split is likely to be in the order of 10% to 20% to the west via Caerphilly and 80% to 90% to the east via Newport.

Development Traffic

3.8 For the purposes of this assessment, it is assumed that all materials imported and exported to the C&D and RAP facility would be transported by road in HGVs with a 20 tonne payload. This is considered to represent a worst case scenario when taking into account the likely use of larger articulated HGVs with higher payloads for some trips, which would more than offset the number of loads imported/exported in Light Goods Vehicles carrying smaller payloads.

3.9 Where articulated HGVs are used, they have higher payloads and would therefore reduce the number of HGV movements required to transport the equivalent volumes of materials to and from the site.

3.10 In order to reduce transportation costs and maximise efficiency, back-hauling of inbound and outbound materials would take place when possible; whereby a vehicle delivering a load of C&D waste, for example, would tip its load then be re-loaded with processed / recycles material before leaving, which would then be delivered to the customer.

3.11 The recycled aggregate exported from the site will in part replace some of the primary aggregates currently distributed from Machen Quarry. Therefore, the traffic associated with the replacement of primary aggregates would offset the existing vehicle trips and therefore reduce the overall increase associated with the proposed recycling activities.

3.12 Notwithstanding this, for the purpose of assessing the potential additional traffic movements associated with the proposed development under worst-case conditions, the associated HGV trips have been calculated assuming no back-hauling takes place and making no allowance for the reduction in HGV movements for primary aggregates sales which will result from some of those sales being substituted by sales of recycled aggregates.

3.13 The existing RAP planning permission allows imports 24 hours per day, 7 days per week and 365 days per year, with exports permitted between 07.00 and 22.00 Mondays to Fridays, 07.00 and 16.00 on Saturdays and 08.00 to 13.00 on Sundays. However, the majority of transport activity is predicted to take place Mondays to Fridays and Saturday mornings, which equates to 275 working days per annum when allowing for public holidays and planned shut-down over the Christmas / New Year period.

3.14 Based on the foregoing, it is apparent that importing 250,000 tonnes in 20t payloads over 275 working days per annum would result in an average of 46 loads / 92 movements per day. As it is assumed there would be no back-hauling of materials in order to represent the worst-case, scenario, the same number of HGVs would be required to export the processed materials, resulting in a combined total of 92 loads / 184 HGV movements per day.

3.15 As indicated in 3.6 above, between 35,000 and 43,750 tonnes of primary aggregate sales would be replaced by recycled products. Based on the same assumptions detailed above in terms of payload and working days, between 6 and 8 loads / 12 and 16 movements would be replaced by the recycling trips, reducing the net increase accordingly.

Development Traffic Impact

3.16 Below, the predicted worst-case development traffic flows are compared with the baseline traffic flows identified in section 2 of this report, assuming that all HGV traffic associated with the development travels to/from either the east or the west.

3.17 The AADF flow for 2023 on the A468 to the east of Machen Quarry was identified to be 7019 vehicles including 348 HGVs. As a worst case, adding 184 movements to this baseline flow results in a total of 7203 movements including 532 HGVs. This combined total may be compared with the historic AADF flows reported at this Count Point, which included a peak combined flow of up to 8954 vehicles including 662 HGVs in 2015 and 7970 vehicles including 936 HGVs when the HGV activity was at its highest in 2004.

3.18 Undertaking the same comparison to the west of Machen Quarry, adding 184 movements the published 2023 AADF of 9145 vehicles including 427 HGVs gives a cumulative flow of 9329 vehicles including 611 HGVs. These combined total flows may be compared with the highest period of HGV activity in 2000 when the published AADF flow was 10,529 vehicles including 745 HGVs, and also the highest published AADF of 11,602 vehicles including 617 HGVs in 2007.

3.19 Directional hourly traffic count data from the two Count Points was available from the DfT website from 2016 between 07:00 – 19:00. Analysis of the data revealed that the peak hour flow at each of the sites on the A468, which occurred between 16:00 – 17:00 at both locations, is approximately 9% of the published AADF values. Applying the 9% ratio to the cumulative AADF flows including the proposed development results in total peak hour flows of 649 and 840 vehicles to the east and west respectively.

3.20 These peak hour flows may be compared with the published design capacity of a route comparable to the A468, which is a good standard rural single carriageway. "*TAG Unit M3.1 Highway Assignment Modelling*" provides advice on the capacities of various road types. For a comparable Rural Single Carriageway, Table D.3 of the document indicates an hourly capacity of between 900 and 1600 vehicles per hour in each direction. Therefore, adding both directions together gives a cumulative capacity of the road between 1800 and 3200 vehicle movements per hour.

3.21 By considering the foregoing, it is apparent that even if the entire working day traffic flow associated with the proposed development (calculated based on worst-case assumptions of no articulated HGV use, no use of back-hauling and no substitution of recycled for primary aggregate) is added to the current AADF baseline activity, assuming a 100% directional distribution at the site access, the cumulative totals to the east and west of Machen Quarry remain significantly below the volumes that have been historically accommodated on the A468.

3.22 It is also apparent that even if the entire worst-case development traffic flows were artificially added to the peak hour flows derived above, the design capacity of the A468 would not be exceeded.

3.23 As there would be some directional split between the west and east of the Machen Quarry access, the actual flows on either the western or eastern links would be lower than the cumulative totals calculated above.

3.24 Similarly, it is likely that there would be some use of larger HGVs and back-hauling of materials in order to minimise transportation costs; both of which would further reduce the actual total additional movements below the levels calculated above, as would the offsetting of those trips associated with the export of recycled aggregate as a replacement for the primary products currently exported from Machen Quarry.

3.25 Given it has been demonstrated that the existing Machen Quarry access safely accommodates HGV traffic, as does the neighbouring road network, and given the cumulative traffic flows with the proposed development would fall below the levels historically accommodated on the A468 whilst remaining well within the design capacity of the route, it can only be reasonably concluded that the network is of an acceptable standard to accommodate the predicted increase associated with the proposed development.

4 SUMMARY

4.1 Heidelberg Materials UK operates Machen Quarry, which has a long planning history relating to the production of aggregate, concrete, asphalt and the processing of Construction and Demolition (C&D) waste and Recycled Asphalt Products (RAP).

4.2 Whilst the production of concrete and asphalt at the site has now ceased, and the permissions for importing and processing C&D waste have now lapsed, RAP processing is still permitted and taking place at the site.

4.3 Planning permission is sought to reintroduce the processing and recycling of C&D waste in addition to the RAP within Machen Quarry.

4.4 The proposed processing would produce recycled aggregates for re-use in construction projects, thereby reducing the consumption of primary aggregated whilst also minimising the volume of materials that would otherwise be sent to landfill.

4.5 An eventual processing figure of 250,000 tonnes per annum has been identified for the combined volumes of C&D waste and RAP.

4.6 The proposed operations would be via the existing, approved Machen Quarry access on the A468, with traffic being distributed to the west to / from Caerphilly and east to / from Newport and beyond.

4.7 The Hurlstone Partnership Limited was instructed to review the acceptability of the proposed development in terms of its highway impact.

4.8 As part of the review, collision and traffic data were analysed. It was found that the existing access to Machen Quarry and the A468 are of a suitable standard to safely accommodate HGV activity, as demonstrated by the collision data recorded over the most recent seven year period available.

4.9 Traffic data on the A468 revealed current levels remain significantly below those previously accommodated, both in terms of overall volumes and HGVs.

4.10 Such is the reduction traffic flow when compared with historic levels, it is apparent that adding the entire daily traffic associated with the proposed C&D and RAP processing to the baseline levels to either the east or west of the quarry would result in flows still below those previously accommodated.

4.11 It was also found that based on the hourly flows for the route, the entire daily flow associated with the proposed development could be artificially compressed to a single hour and added to the baseline peak hour flow without exceeding the design capacity of the A468.

4.12 The foregoing was established based on worst-case assumptions whereby:

- all transportation of materials would be via rigid HGVs with a 20t payload;
- there would be with no back-hauling (where an HGV delivering material to the site for processing would be loaded with processed materials for delivery to customers on the outbound trip);
- there would be no substitution of recycled aggregates for primary aggregates supplies from the quarry; and
- the comparison with the DfT Road traffic data assumes a 100% distribution to either the east or west to ensure the worst-case impact.

4.13 In reality, it is likely that there would be a directional split between the east and west, as predicted by the operator; that some loads would be transported on a back-haul basis; that some of the material would be transported within articulated HGVs; and that there would be some substitution of recycled aggregates for primary aggregates; all of which would reduce the number of movements associated with the proposed development.

4.14 Given it has been demonstrated that the existing Machen Quarry access safely accommodates HGV traffic, as does the neighbouring road network, and given the cumulative traffic flows with the proposed development would fall below the levels historically accommodated on the A468 whilst remaining well within the design capacity of the route, it can only be reasonably concluded that the network is of an acceptable standard to accommodate the predicted increase in traffic associated with the proposed development.