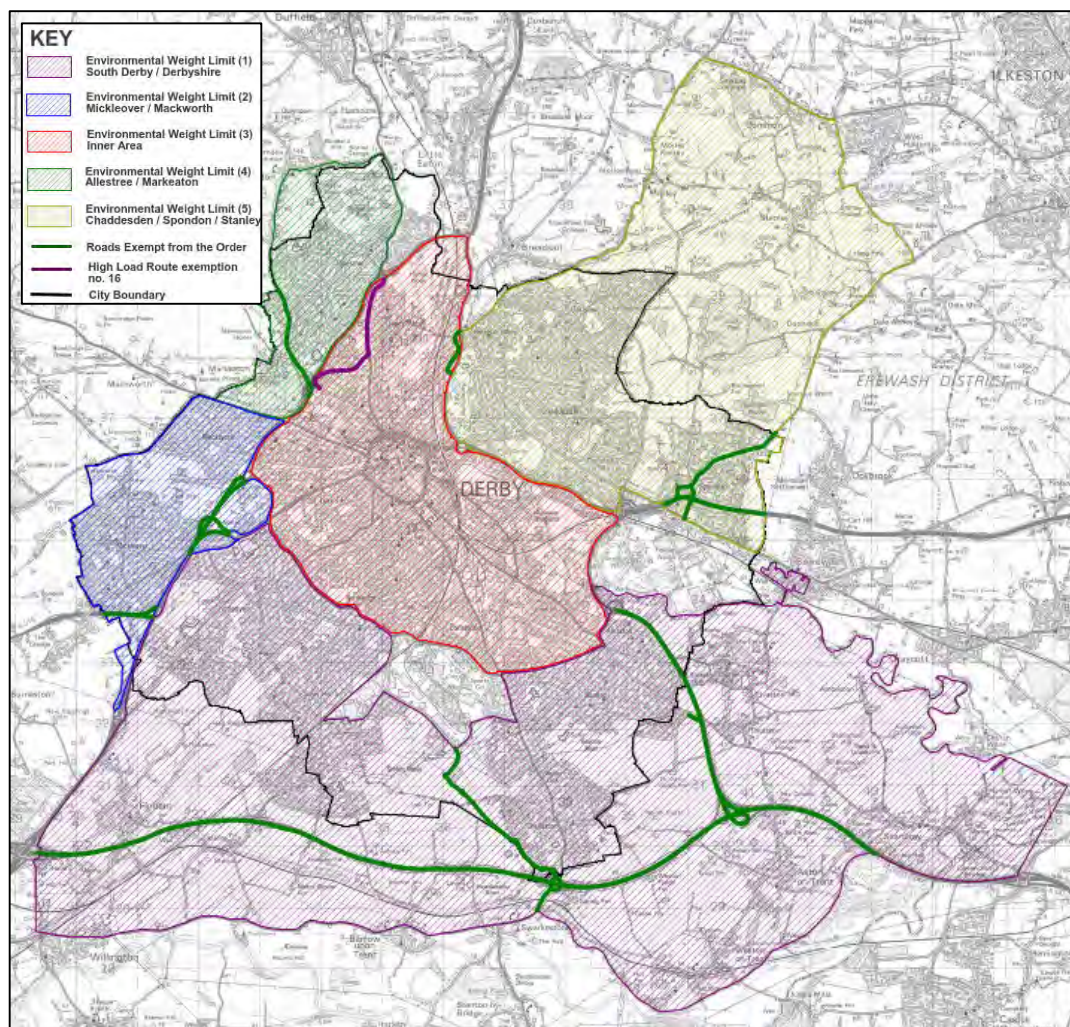


Figure 4.7: Existing HGV restrictions in Derby City (Environmental Weight limits) (Source: DCiC)



4.2.11 **Route Usage and Congestion:** The level of vehicular congestion can be represented by the Annual Delay per Vehicle Mile. This is the annual average delay (in seconds) per Vehicle-mile travelled (VMT) and is calculated by dividing the annual Vehicle Hours of Delay (VHD) by the Annual Demand per Vehicle Miles Travelled (VMT) and multiplying the result by 3,600 (seconds per hour).

4.2.12 Figure 4.8 shows the Average Annual Delay per Vehicle Mile in the AM peak period (0800 – 0900 hrs) across the network, whilst Figure 4.9 shows this for the PM peak period (1600 – 1700hrs). The Annual Delay per Vehicle Mile data has been supplied by DCC and is available for 2018.

Figure 4.8: Annual Delay per Vehicle Mile (AM peak period (0800 – 0900hrs))

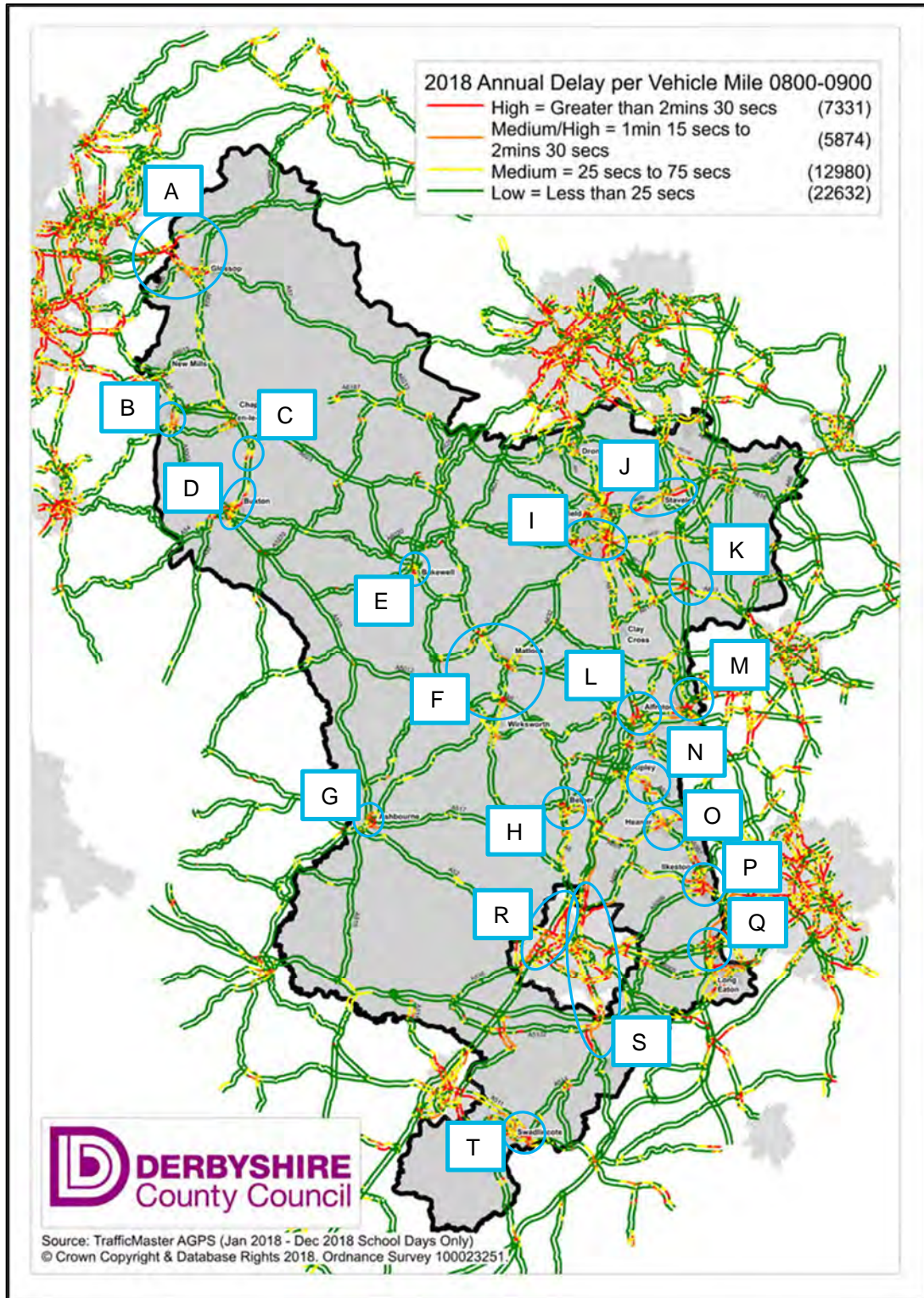
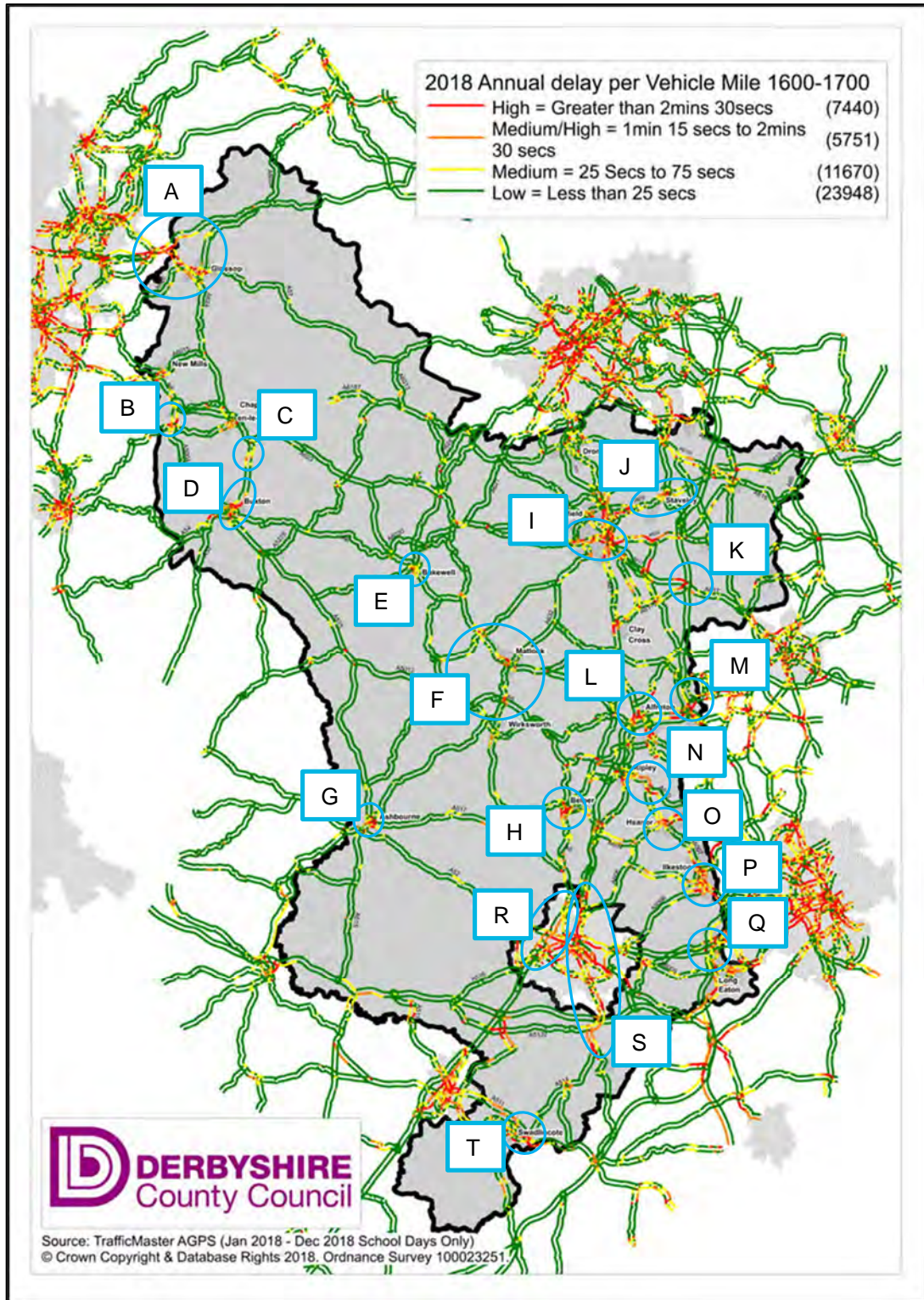


Figure 4.9: Annual Delay per Vehicle Mile (PM peak period (1600 – 1700hrs))



4.2.13 Journey time delay clusters (comprising 'high' delays (greater than 2 minutes 30 seconds) and 'medium' delays (between 1 minute 15 seconds and 2 minutes 30 seconds)) are identified at the following locations:

- Site A – A57 (through Glossop and continuing to the northeast of Glossop)
- Site B – A6 (near Buxworth and Whaley Bridge)
- Site C – A6 (near Dove Holes)
- Site D – A6 (Buxton)
- Site E – A6 (Bakewell)
- Site F – A6 (near Darley Dale, Matlock and Cromford)
- Site G – A515 (Ashbourne)
- Site H – A6 (Belper)
- Site I – A619 / A61 / A617 (Chesterfield)
- Site J – A619 (Staveley)
- Site K – M1 Junction 29
- Site L – A38 / A61 (Near Alfreton)
- Site M – M1 Junction 28
- Site N – A610 (Near Ripley)
- Site O – Heanor town centre
- Site P – Ilkeston town centre
- Site Q – M1 Junction 25
- Site R – A38 (Derby City)
- Site S - A6 / A52 / A61 (Derby City)
- Site T – Swadlincote town centre

4.2.14 **Usage by HGVs:** DCC does not routinely process data with regards to which sections of its network experience the greatest loading of HGVs. Notwithstanding this, data from DCC has been extracted close to each of the existing and proposed minerals sites to show the percentage of HGVs as a proportion of total traffic.

Table 4.1: Usage of Routes near Minerals Sites by HGV

Site	Count Description	Count Year	% HGVs	AADT
Ashwood Dale	A6 Ashwood Dale (West of site access)	2019	6.6%	5,146
Ball Eye	A5012 Via Gellia (West of the site access)	2019	13.1%	4,392
Bolosover Moor	B6417 (north of site access road)	2019	1.9%	6,288
Bone Mill**	Hopton Via Gellia_B5023 junction	2008	44.9%	367
Brierlow	B5053 (Buxton Road)	2015	8.3%	1,872
Brassington Moor**	A5012_B5056 junction	2017	26.6%	2,141
Dene**	B5036 Cromford Hill_A5012 Water Lane	2017	5.5%	10,113
Dove Holes**	A6_Dale Road_Station Road Junction	2009	28.3%	1,761
Dowlow	A515 (West of site access)	2015	36.4%	6,860
Dukes	A6 High peak Junction (northwest of site)	2019	11.3%	9,523
Elvaston	B5010 Shardlow Moor (East of site access)	2019	2.5%	4,387
Grange Mill	A5012_B5056 junction	2017	26.6%	2,141
Hall Dale	A6 (north of site access)	2017	9.4%	11,471
Hayfield	A6015 (west of site access)	2015	1.5%	6,079
Hillhead	Brierlow Road (east of site access)	2015	14.1%	2,430
Hindlow	A515 (West of site access)	2015	36.4%	6,860
Mercaston	A52 Mainroad Brailsford (East of site access route)	2014	5.1%	11,235
Moorhay Farm	Top Lane (south of site access)	2019	NO DATA	1,464
Mouselow	Shaw lane (west of site access)	2014	1.0%	3,131
Shardlow***	A50 - east of site on/off-slip	2019	10.5%	71,280
Shirebrook	N/A - No vehicle movements from this Minerals site			
Slinter Top**	B5036 Cromford Hill_A5012 Water Lane	2017	5.5%	10,113
Swarkestone	A5132 Swarkestone Road (east of site access)	2015	15.2%	8,733

Tunstead	A6 Fairfield Road (south of Waterswallows Road)	2019	6.8%	20,010
Waingroves	B6179 Derby Road (southwest of the site)	2011	6.8%	8,439
Whitwell	B6042 Craggs Road(west of site access)	2006	13.9%	2,278
Willington***	A5132 (east of the A5132/A38 junction. West of the site access)	2019	1.8%	10,381
Foston**	Leathersley Lane (east of proposed site access)	2009	2.8%	1,956
Sudbury**	Leathersley Lane (east of proposed site access)	2009	2.8%	1,956

* Owing to the ongoing COVID19 pandemic, traffic data from 2019 has been used in place of more recent (2020 data) owing to reduced traffic flow during the pandemic.

** Calculated from MCC data

*** Site access via Highways England SRN. Traffic Count data sourced from the Department for Transport Traffic Count database.

4.2.15 **Road Safety:** The GTA states that a TA or a TS (whichever is appropriate for the scale and type of development) should “establish the current personal injury accident records for the most recent three-year period, or five years if this is considered to be more appropriate.”

4.2.16 Road safety collision statistics have been obtained from DCC and cover the period from 01/08/2015 – 31/07/2020. The data obtained relates to those collisions that resulted in a personal injury and which were reported to the police. This data (known as STATS19 statistics) is generally recognised to be the most complete record of road collisions occurring on the local highway network. For the avoidance of doubt, and as is normal practice, they do not include statistics from collisions resulting in “damage-only” to vehicles, or which were not reported to the police.

4.2.17 Each collision resulting in a personal injury is classed as either ‘Slight’, ‘Serious’ or ‘Fatal’ by the police depending on the most serious injury resulting from the collision (i.e. a collision resulting in two ‘Slight’ injuries and one ‘Serious’ injury would be classified as a ‘Serious’ collision). Definitions given in Road Accidents Great Britain (published by the DfT) are as follows:

- Slight: An injury of a minor character such as a sprain (including neck whiplash injury), bruise or cut which are not judged to be severe, or slight shock requiring roadside attention. This definition includes injuries not requiring medical treatment.
- Serious: An injury for which a person is detained in hospital as an “in-patient”, or any of the following injuries whether or not they are detained in hospital: fractures, concussion, internal injuries, crushings, burns (excluding friction burns), severe cuts, severe general shock requiring medical treatment and injuries causing death 30 or more days after the accident. An injured casualty is recorded as seriously or slightly injured by the police on the basis of information available within a short time of the accident. This generally will not reflect the results of a medical examination, but may be influenced according to whether the casualty is hospitalised or not. Hospitalisation procedures will vary regionally.
- Fatal: Human casualties who sustained injuries which caused death less than 30 days (before 1954, about two months) after the accident. Confirmed suicides are excluded.

4.2.18 Figure 4.10 shows all collisions involving an HGV for the past 5 full years of collision data within Derbyshire and Derby City, categorised according to severity.

4.2.19 Table 4.2 summarises the collision clusters identified in Figure 4.10.

Figure 4.10: HGV-involved collisions in Derbyshire and Derby (categorised according to severity)

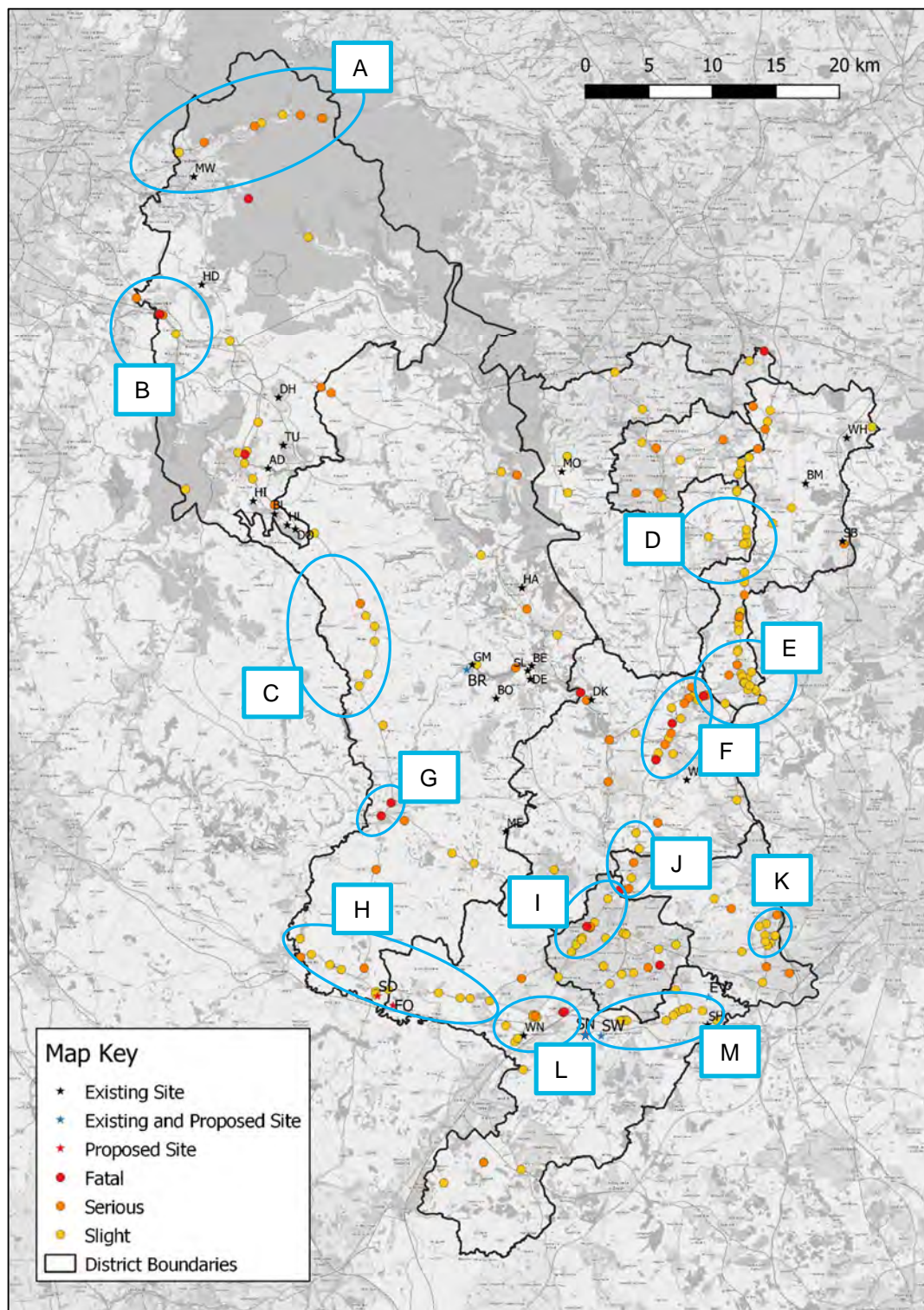


Table 4.2: HGV collision clusters

Site	Route	Number of 'Fatal'	Number of 'Serious'	Number of 'Slight'
A	A628	0	4	4
B	A6 (near New Mills)	1	1	1
C	A515 (south of Buxton)	0	1	5
D	M1 J29	0	0	6
E	M1 J28	0	1	15
F	A38 (between Ripley and Alfreton)	3	4	8
G	A515 (Ashbourne)	2	0	0
H	A50 (between Uttoxeter and Willington)	0	1	9
I	A38 (A38 / A5111 Jn and A38 / A52 Jn)	1	1	13
J	A38 (Little Eaton)	1	2	5
K	M1 J25	0	0	4
L	A50 / A38 (near Willington)	0	1	6
M	A50 (between Willington and Shardlow)	2	0	11

4.2.20 **Bridge Strikes:** DCC have identified the following bridge structures as having a history of bridge strikes:

Road

- B5023, Middleton Road, Middleton by Wirksworth, 12 foot restriction –carries the High Peak Trail over the B5023 (structure ref C25009)
- B5036, Steeple Grange, 14 foot 6 inch / 4.4m restriction –carries the High Peak Trail over the B5036 (structure ref C25006)
- A517, Bridge Foot, Belper, 13 foot / 4m restriction – bridge is part of the mill complex and is privately owned (structure ref H34237).
- Heage Lane, Etwall just north of the roundabout junction with the A516 (structure ref D23091). This bridge carries a cycle trail over Heage Lane and it is currently being looked at to upgrade the signage, which is 13 foot 3 inches clearance.

Rail

- A610, Ripley Road, Ambergate – carries Midland Mainline
- A615, Matlock Road, Oakerthorpe – carries Midland Mainline
- A624, Hayfield Road, New Smithy – carries Hope Valley Line
- B5008, Repton Road, Willington – carries Cross Country route
- B6052, Station Road, Whittington Moor (Chesterfield) – carries Midland Mainline

4.2.21 **Future Road Schemes:** Highways England, DCC and DCiC are pursuing a programme of road improvements within the Plan area. These range from simple traffic calming schemes through to major road schemes. For instance, widening of the M1 though Derbyshire has recently been completed by Highways England, providing four lanes from north of Chesterfield through to south of Nottingham.

4.2.22 The schemes that could have the greatest impact on minerals traffic have been identified for consideration in this report. These include:

- Ashbourne A515 Bypass;
- A514 Swarkestone Bypass;
- A57 Link Roads Project;
- A6 / Waterswallows (Hogshaw) roundabout;
- Derby A38 Grade Separation; and
- A50 / A500 Corridor Improvements

- 4.2.23 A public consultation on the Ashbourne A515 bypass was undertaken in late 2020 and concluded that a western alignment was preferred which would allow minerals traffic to route north – south without the requirement to travel through Ashbourne’s historic town centre.
- 4.2.24 The A514 Swarkestone bypass is identified in the Derbyshire LTP and the new County Council administration has made a commitment to work to find a bypass solution to the long suffering and unique nationally important medieval Grade I Listed Swarkestone Causeway within its 2021 Manifesto. This is an important north-south route south of Derby.
- 4.2.25 The A57 Link Roads project (formerly known as the Trans Pennine Upgrade Programme) includes the creation of two new link roads: Mottram Moor Link Road (a new dual carriageway from the M67 junction 4 roundabout to a new junction on the A57(T) at Mottram Moor) and A57 Link Road (a new single carriageway link from the A57(T) at Mottram Moor to a new junction on the A57 in Woolley Bridge). This project is being pursued by Highways England and is intended to relieve congestion in the area north of Glossop.
- 4.2.26 High Peak Borough Council is providing a new roundabout on the A6 north of Buxton to replace the existing priority junction of A6 / Waterswallows Road. This should improve access to Tunstead.
- 4.2.27 The A38 grade separation scheme is being promoted by Highways England, and is supported by DCC / DCiC. The scheme would see the grade separation of three roundabouts around Derby’s western boundary including: Kingsway, Markeaton and Little Eaton.
- 4.2.28 The A50 / A500 Corridor Improvements are being pursued by Highways England and Midland Connect, and involves a long-term programme of potential interventions along the corridor to improve reliability and shorten journey times on the route.

4.3 Decarbonisation

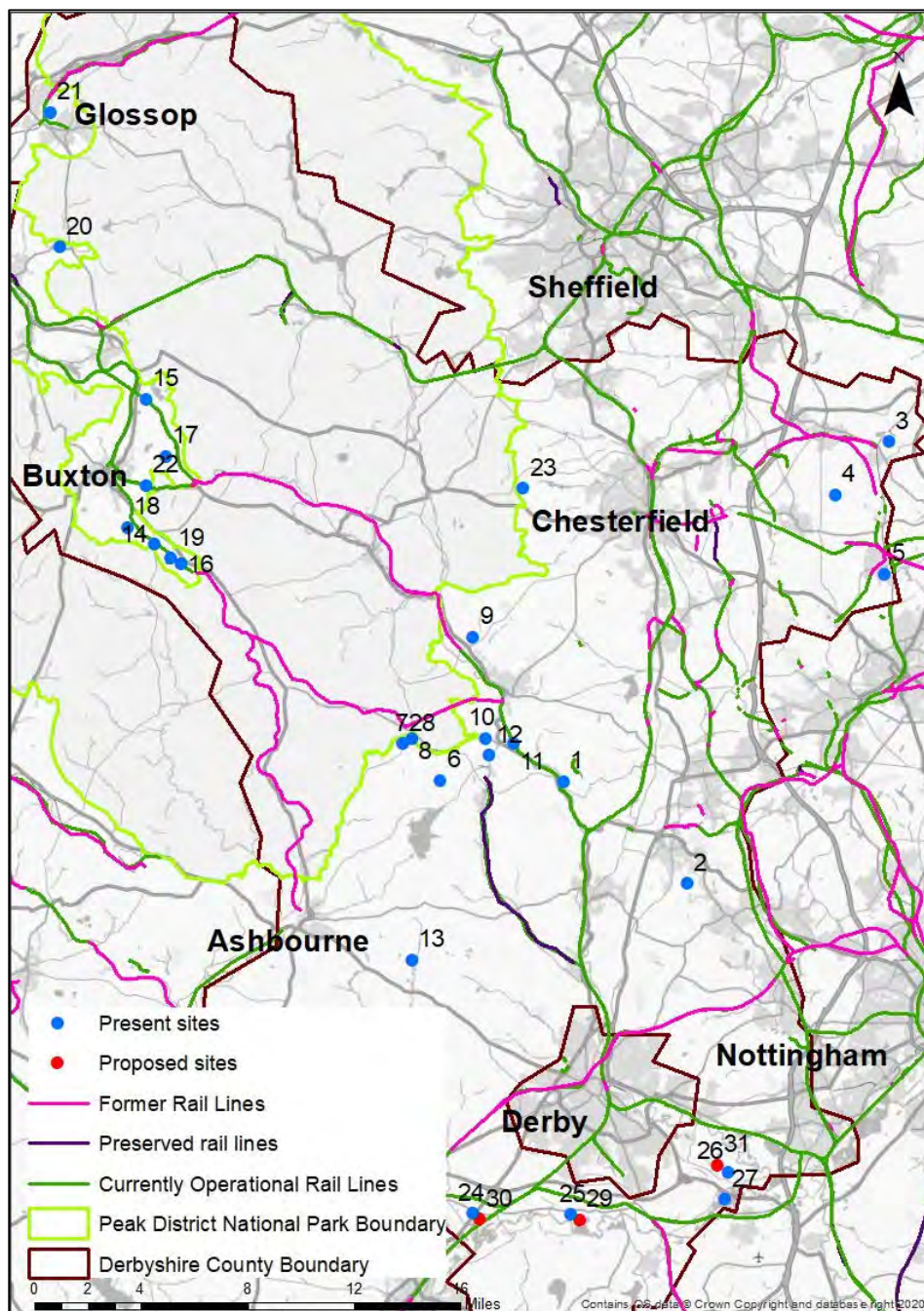
- 4.3.1 According to Midland Connect, although HGVs account for 17% of transport carbon emissions nationally, the proportion of HGV emissions is higher than average in the Midlands and could be as much as 30%.
- 4.3.2 In response, Midland Connect has undertaken survey work which highlighted several challenges relating to the adoption of alternative fuel vehicles. Amongst fleet operators, the three most frequently cited barriers were a lack of recharging and refuelling infrastructure, the upfront cost of vehicle acquisition, and lack of vehicle availability. Amongst vehicle and infrastructure suppliers, the top three barriers to alternative fuel uptake were upfront vehicle cost, uncertainty over residual values and lack of recharging and refuelling infrastructure, with infrastructure availability being constrained by access to sites of the appropriate size and location, at reasonable costs. It is challenging for suppliers to find suitable sites, which are near motorways and the strategic road network, which have enough space for large vehicles, including turning circles.

4.3.3 Midland Connect has therefore developed a methodology to estimate the future requirements for charging and refuelling infrastructure for light goods vehicles (LGVs) and heavy goods vehicles (HGVs) in the Midlands to 2040 and a methodology for identifying specific locations for charging/refuelling stations. The new County Council administration has made a commitment to work with public and private sectors to deliver two hydrogen fuel stations in Derbyshire by 2025.

4.4 Railways

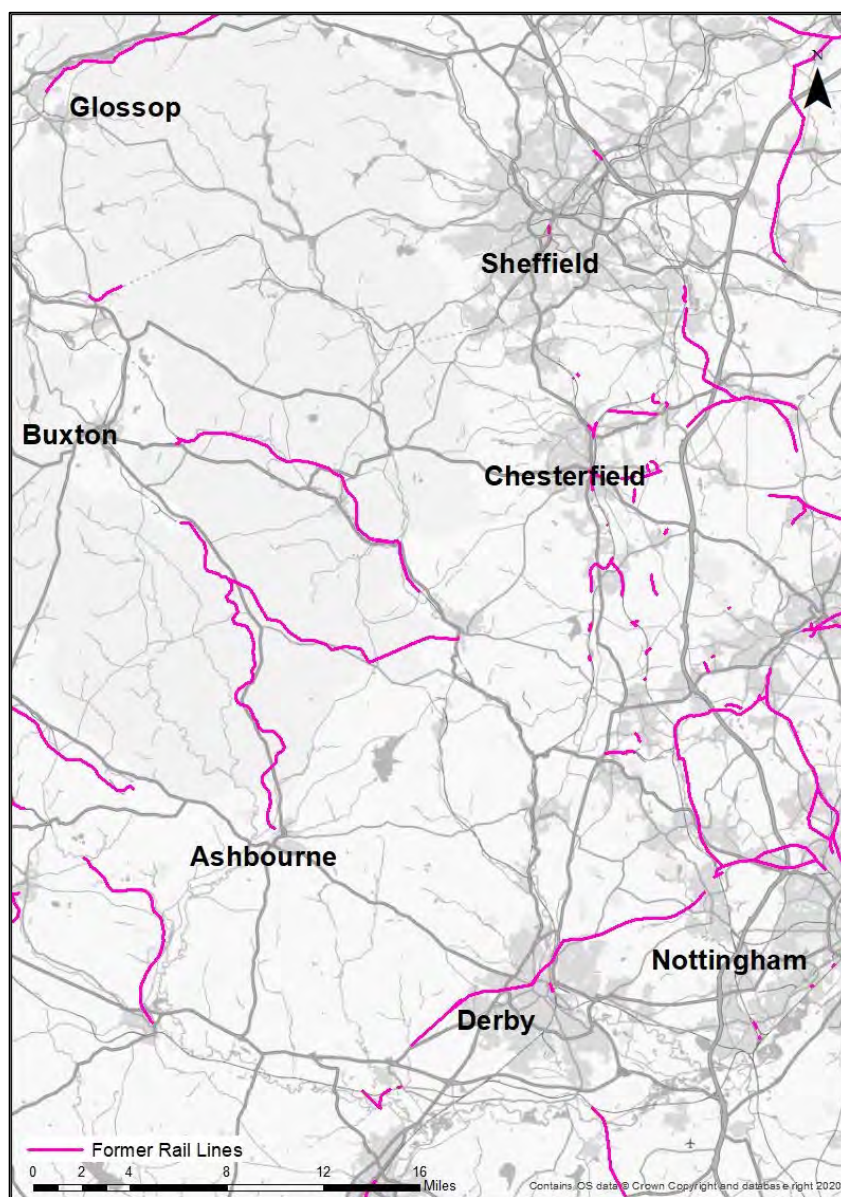
4.4.1 **Existing Rail Network:** Figure 4.11 shows the existing rail network within Derbyshire and Derby City within the context of the existing and proposed sites. The figure identifies current and former rail lines.

Figure 4.11: Map of Derbyshire and Derby City rail network



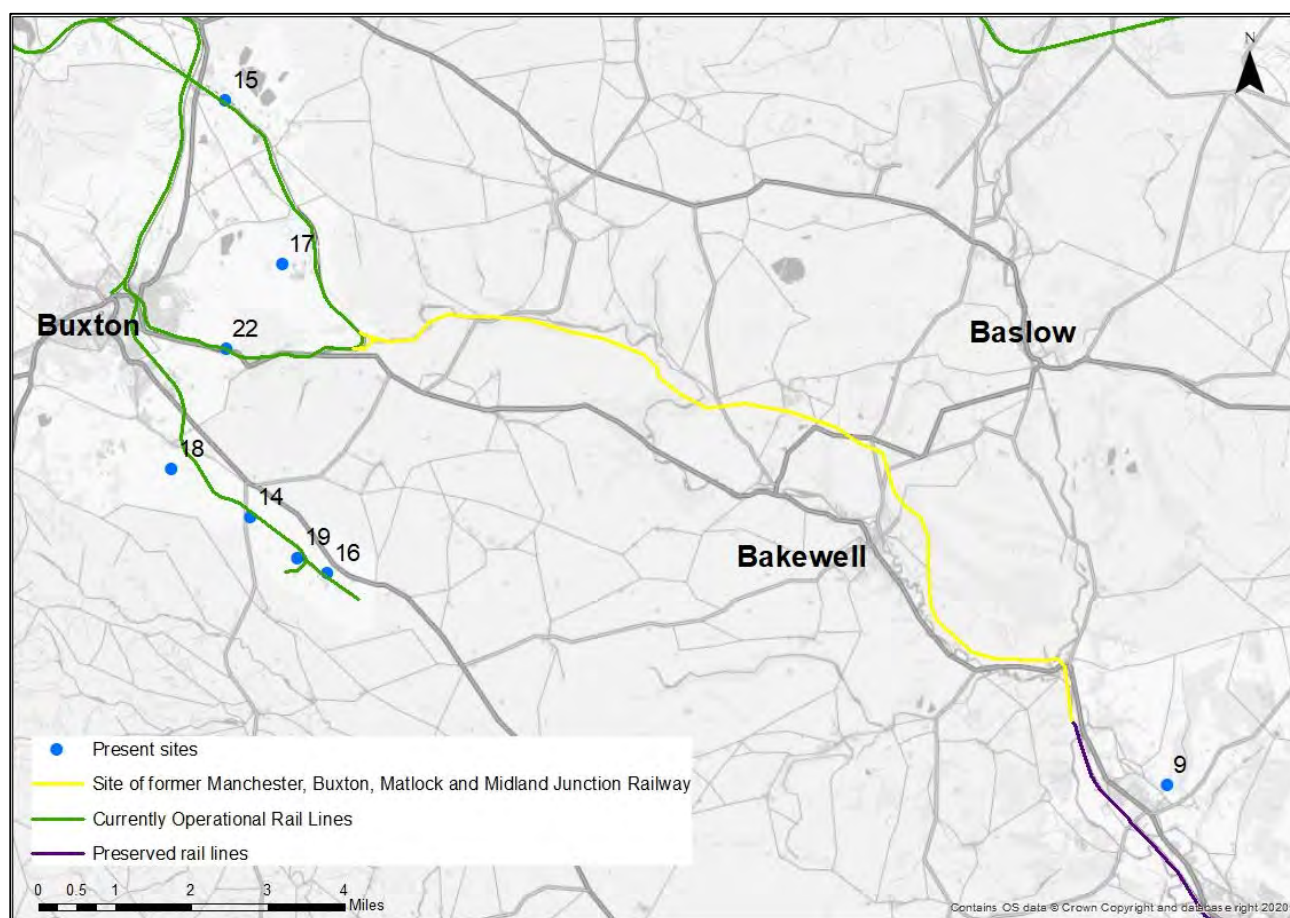
4.4.2 **Former rail lines:** Figure 4.12 shows the former rail lines in the study area.

Figure 4.12: Former rail lines in Derbyshire and surrounding areas



4.4.3 One example of a disused rail line in the region is the Manchester, Buxton, Matlock and Midland Junction Railway which was fully operational between the 1860s and 1968. This formerly ran from Matlock to Buxton via Rowsley. The most northern section from Millers Dale forms part of the Great Rocks Line, whilst the section between Matlock and Rowsley forms Peak Rail, a heritage railway. Much of the currently disused route between Rowsley South station on Peak Rail and the junction at Millers Dale forms part of the Monsal Trail, a popular cycle route (see below for DCC’s official position on this). Figure 4.13 shows this area in more detail.

Figure 4.13: Map showing former route of the Manchester, Buxton, Matlock and Midland Junction railway and the surrounding area



- 4.4.4 The Manchester and East Midlands Rail Action Partnership (MEMRAP) is campaigning to reopen the disused section of the line facilitating through travel between Buxton and Matlock. Current plans are for this line to facilitate passenger, freight and heritage services. It is understood that minerals operators have concerns with this scheme because of capacity concerns (especially in the area around Chapel Milton). Para 4.4.5, below, sets out DCC's official position on the Monsal Trail.
- 4.4.5 **DCC Position on Monsal Trail:** DCC places great value on the Monsal Trail within the County's existing offer to both residents and visitors. Prominent within its forward plans are extending this and completing the White Peak Loop, of which the Monsal Trail is a vital component. There are some 300,000 walker and cyclist users of the Trail annually and the numbers continue to grow year-on-year. Once the White Peak Loop is completed, usage is expected to increase further, as it will become an even more attractive and iconic route.
- 4.4.6 Given the nature of the former rail line, DCC can see no way in which a Trail, open to all users, can co-exist with any form of rail operation along the whole of this route, particularly through its tunnels or over its viaducts and bridges. It does not believe that there is any alternative to the use of these tunnels and bridges, given the geography and terrain. Even if technically feasible, any adaption would be a major undertaking and extremely costly and, if there are proposals, they would have to replicate the truly outstanding character of the current route, without making them impractical for walkers and cyclists.
- 4.4.7 The impact of reintroducing passenger and freight rail services into a highly sensitive environment such as the Wye Valley would be significant. The context of a Site of Special

Scientific Interest imposes a major challenge for any infrastructure proposal, and the Council will not place itself in the role of promoting or supporting any project without first establishing how this is to be addressed. It is also mindful that impacts would not be restricted to the new section of route, with any additional rail services passing through the Derwent Valley Mills World Heritage Site and potentially involving night-time freight paths through residential areas.

- 4.4.8 **Rail Tonnage:** Dove Holes and Tunstead are the largest producing quarries in terms of tonnage. Currently, both supply 50% of minerals transported by rail. Minerals are sent to Hindlow from Tunstead for processing and then dispatched by rail. The other rail linked operational quarry is Dowlow.
- 4.4.9 Hindlow and Hillhead are not currently operational but are anticipated to resume working in the near future and to be rail linked, with Hillhead expected to have approximately 5 trains a day. Another recent project in the region is the £14 million extension of railway sidings used by Freightliner and DB cargo trains at Buxton by 430 metres. These were previously limited to 18 wagons, or 1,750 tonnes, by the length of the old sidings, but the new sidings can now accommodate 26 wagons carrying up to 2,500 tonnes. Each train is estimated to replace 76 lorries.
- 4.4.10 There is a potential issue with a lack of receiving ability (yards) close to Derby and Nottingham from the quarries in the Derbyshire region. Chaddesden is a possibility but there were Network Rail obstacles and that there is little capability for bigger quarries to get to Derby or Nottingham by rail.
- 4.4.11 There are also challenges regarding the ability to run longer trains, as planning is in place at the sending end but also needs planning at the receiving end (for example rail heads in middle of cities need to be retained). In relation to this, Tarmac conducted a trial in March 2021 of a Jumbo train consisting of a class 70 locomotive providing the pulling power to a class 66 locomotive and 39 wagons, hauling 3,600 tonnes of aggregate a total of 203 miles from Tunstead to Wembley Yard in London. The more services like this can be run, the more Derbyshire will be economically viable over other places. However, this will be dependent on railway policy, such as finding suitable train paths for these jumbo trains to operate regularly. This links back to the information on the extension to Buxton sidings as described above.
- 4.4.12 **Existing and Potential Connectivity:** GIS analysis and Google Maps have also been used to determine whether a feasible rail connection could be made to sites shown in the above tables where a rail connection is not currently made. This considers proximity of sites to railway lines, obstructions (such as buildings) and terrain. It is worth noting that where sites are shown as close to the rail network but not rail connected this only applies to where a viable rail connection could reasonably be made. For example, if a site is moderately close to a railway but there is an obvious obstruction, such as housing or a large building, then a rail connection is not considered viable despite the proximity.
- 4.4.13 It is important to note that only geographical constraints have been considered at this point, and any economic considerations (such as whether a rail connection would be economically viable based on service patterns and quarry size) has not been considered.
- 4.4.14 Table 4.3 identifies whether the existing mineral sites are connected to the rail network and whether they have feasibility to be connected to the rail network in the future. Table 4.4 serves the same purpose for proposed mineral sites.

Table 4.3: Rail connectivity – Existing sites

Site ID	Quarry	Rail connected?	Rail connection feasible (if not already connected)?
1	Dukes Quarry, Whatstandwell	No	No
2	Waingroves Quarry, Ripley	No	No
3	Whitwell Quarry	No	Yes
4	Bolsover Moor - Non-Operational	No	No
5	Shirebrook Colliery	No	No
6	Bone Mill Quarry (Ryder Point), Hopton	No	No
7	Brassington Moor Quarry (Longcliffe)	No	No
8	Grange Mill Quarry, Wirksworth	No	No
9	Halldale Quarry, Darley Dale Non-Operational	No	Yes (If MEMRAP scheme gets go ahead)
10	Ball Eye Quarry, Cromford Non-Operational	No	No
11	Slinter Top Quarry, Cromford	No	No
12	Dene Quarry, Cromford	No	No
13	Mercaston Quarry	No	No
14	Brierlow Quarry, Buxton	No	Yes
15	Dove Holes Quarry, Buxton	Yes	-
16	Dowlow Quarry, Buxton	Yes	-
17	Tunstead Quarry (Tunstead - Old Moor), Buxton	Yes	-
18	Hillhead Quarry, Buxton	Yes	-
19	Hindlow Quarry Buxton	Yes	-
20	Hayfield Quarry	No	No
21	Mouselow Quarry, Glossop	No	Yes

Site ID	Quarry	Rail connected?	Rail connection feasible (if not already connected)?
22	Ashwood Dale, Buxton	No	Yes
23	Moorhay Farm	No	No
24	Willington	No	Yes
25	Swarkestone	No	No
26	Elvaston - Non-Operational	No	No
27	Shardlow	No	No

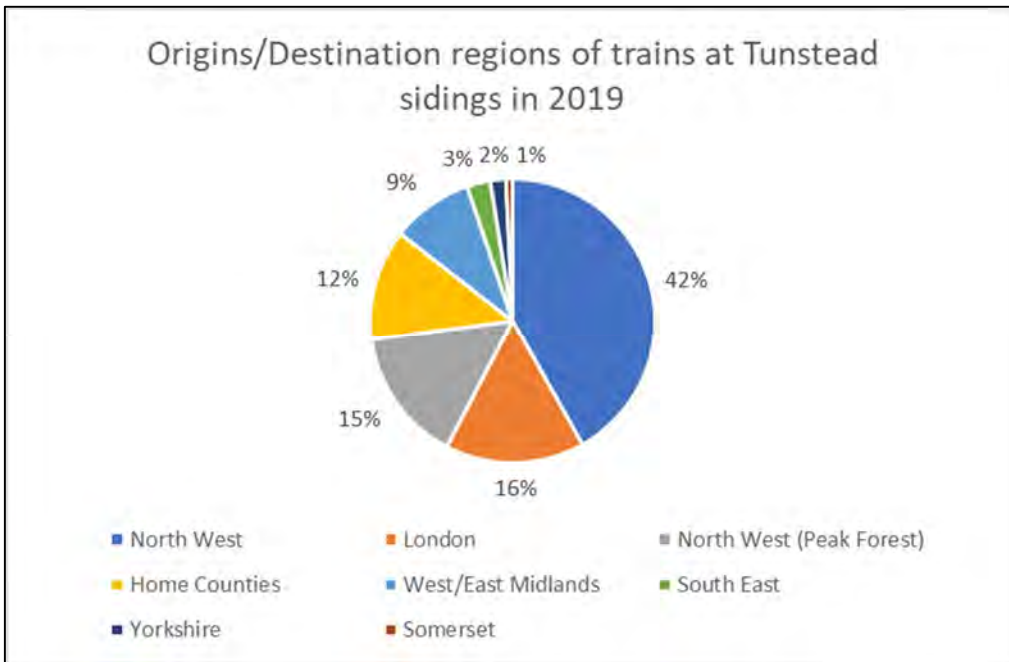
Table 4.4: Rail connectivity – proposed sites

Site ID	Quarry	Rail connected?	Rail connection feasible (if not already connected)?
28	Brassington Moor Quarry (Longcliffe)	No	No
29	Swarkestone (inc. Swarkestone North)	No	No
30	Willington	No	Yes
31	Elvaston	No	No
32	Foston	No	Yes
33	Sudbury	No	Yes

4.4.15 **Destinations of Export:** AECOM has also used data which was sourced as part of a request made to Network Rail. This data details the regions which rail services are operating to, from some of the key minerals terminals in the Derbyshire region. Data such as this is also available in open source form and is similarly available on websites such as Open Train Times and Real Time Trains to track live movements.

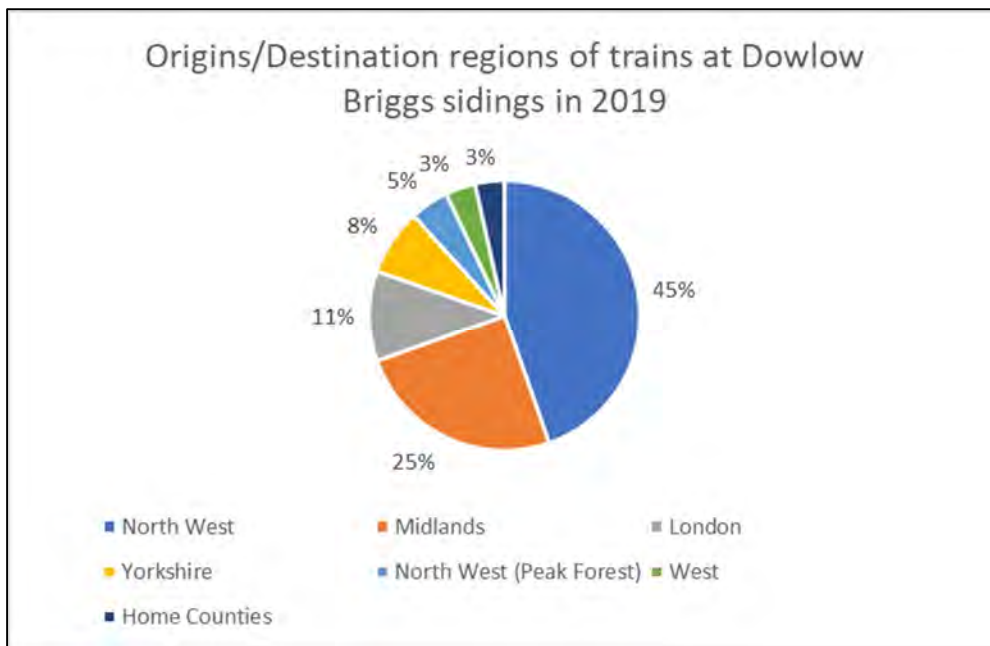
4.4.16 Figure 4.14 shows some the origins / destinations of trains at the Tunstead sidings in 2019. It is important to note that this contains data from both GBRF and Freightliner services. In total, there were 4,122 arrivals and departures from Tunstead sidings in 2019 (Stanox codes 34110, 34111 and 34114) to the destinations shown in Figure 4.14. It is also important to note that most of the intra-regional services (within the North West Peak Forest region) were services running between Tunstead sidings and Hindlow. It is also worth noting that some minerals are extracted at Tunstead but processed at Hindlow.

Figure 4.14: Origins/Destination regions of trains at Tunstead sidings in 2019 (sourced as part of AECOM request made to Network Rail)



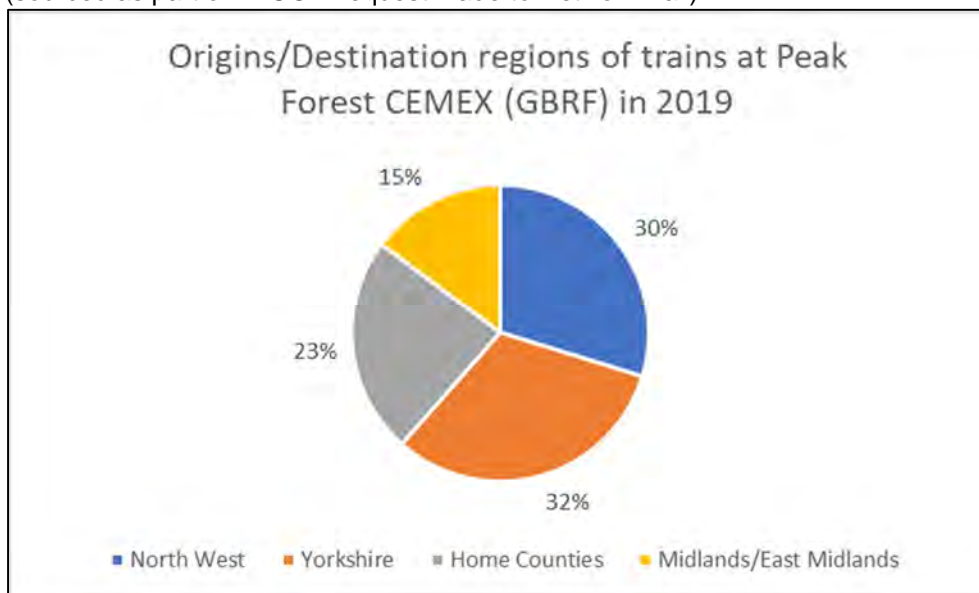
4.4.17 Breedon Aggregates operate several aggregates sites in and around the Derbyshire region including Dowlow Quarry. From here, in 2019, 1,086 rail services arrived or departed from Dowlow Briggs sidings (Stanox 34232). The destination regions of these services are shown in Figure 4.15.

Figure 4.15: Origins/Destination regions of trains at Dowlow Briggs sidings in 2019 (sourced as part of AECOM request made to Network Rail)



- 4.4.18 Cemex operates the Dove Holes Quarry & Asphalt Plant in Derbyshire, incorporating a wide range of construction products such as aggregates and asphalt. This is also the county's leading producer of crushed rock aggregate (in terms of tonnage). In total in 2019, 2150 rail services arrived or departed this plant (Stanox 34090). The destination regions of these services are shown in Figure 4.16.

Figure 4.16: Origins/Destination regions of trains at CEMEX Dove Holes Quarry in 2019 (sourced as part of AECOM request made to Network Rail)



- 4.4.19 Additionally, there are several quarries around the Matlock / Wirksworth area. These include Longcliffe, Grange Mill, and Dene supplying aggregates and industrial minerals. None of these are rail connected.

4.5 Waterways

- 4.5.1 Within the UK, and especially in the North of England and the Midlands, there is significant appetite to increase freight by water. The Canal and River Trust notes how the canals were originally built for the primary purpose of freight transportation, and there continues to be a role for freight by water where this is cost-effective, and waterways are navigable.
- 4.5.2 Derbyshire waterways, particularly the canal network, have a history of freight transportation, especially with the transportation of minerals such as coal during the industrial revolution and before railways became more widespread as a means of transportation. The most recent was in the late 1990s when sand and gravel extracted from Attenborough Pit was barged to the processing plant at Attenborough in Nottingham. However, any use of water freight in Derbyshire is very much historic and there is no evidence of current water freight use.
- 4.5.3 Figure 4.17 shows the current domestic water transport network in the UK¹. Overall, Figure 4.15 shows there is no current domestic water transport network covering Derbyshire, with the closest being the River Trent and the Manchester Ship Canal. It is noted that the one of the only navigable waterways within Derbyshire is located within Staveley, as shown in red in Figure 4.18. The eastern 14 miles of the Trent and Mersey canal are also within Derbyshire.

¹ Taken from *The UK domestic water transportation system: an evidence review* (Government Office for Science, 2018)

Figure 4.17: Domestic water transport network

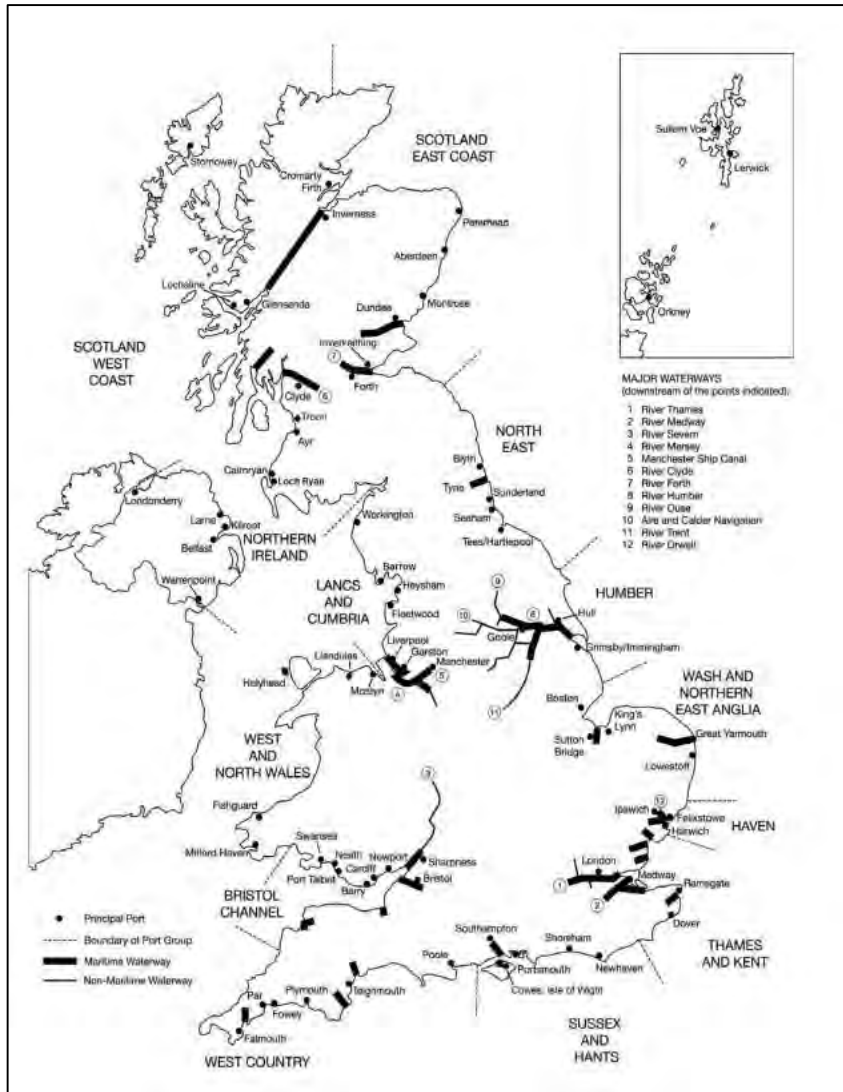



Figure 4.18: Navigable waterways (Derbyshire)

- 4.5.4 In 2014, DCC published their 2014-2019 Waterways strategy². Whilst no reference was directly made to minerals and aggregates (or any other) freight transportation, the idea of using Derbyshire waterways for ‘sustainable transport’ was identified as a key way of meeting and supporting strategic priorities in the ‘Economy’ key delivery area. This also documents how “*the canals and their towpaths should be recognised for their role as part of an integrated and sustainable transport network that reduces congestion, provides safe routes and reduces the burden on other key services for which there are significant pressure on resources*”.
- 4.5.5 Additionally, the Waterways strategy included a table outlining their strategic priorities for 2014-19. This is shown in Table 4.4, demonstrating how the Chesterfield Canal, the Cromford Canal and the Derby and Sandiacre canal are identified as providing a sustainable transport route. It may therefore be worthwhile to further consider freight capability for these waterways in addition to as a transport use for passengers as part of any refresh of this strategy or review of priorities going forward.
- 4.5.6 Additionally, no explicit mention is made in Table 4.5 to the Trent and Mersey canal, which flows through much of the sand and gravel resource area. However it is mentioned in the report that “Derbyshire County Council will support and collaborate with the Canal and River Trust to manage and enhance the canal and recognise the benefits this navigable canal [Trent and Mersey] brings to the County”.

² <https://www.derbyshire.gov.uk/site-elements/documents/pdf/council/meetings-decisions/meetings/cabinet/17-6-2014-derbyshire-waterways.pdf>

Table 4.5: principal characteristics and those elements prioritised in the Derbyshire County Waterways Strategy 2014-2019, including those waterways marked as providing a sustainable transport route (DCC, 2014)

<ul style="list-style-type: none"> ● Not leading or large project at DCC ●● Moderate input ●●● Substantial commitment  Derbyshire County Council Waterways Strategic Priorities identified 2014-19	Chesterfield Canal	Cromford Canal	Derby & Sandiacre Canal	Erewash Canal	Peak Forest Canal/Bugsworth Basin	Other waterways
Restoration underway	●●●		●	●●●	●●●	●●●
Within DCC regeneration zone	●●●					
Within areas of high regeneration need	●●●	●●	●●	●●●	●●	
Navigable to boat traffic	●●	●		●●●	●●●	●●●
DCC is significant landowner	●●	●●	●			
DCC is Navigation Authority	●●●	●●●				
Formal Partnership for development	●●●					
Constituted body	●●●	●●●	●●●	●●●	●●●	●●●
Provides sustainable transport route	●●●	●	●●●	●●●	●●●	
Supports sport/formal recreation	●●●	●●	●●	●●●	●●●	●●●
Engineering feasibility	●●	●	●●	●●●		●●●
Informal Partnership for development		●●				
World Heritage Site		●●●	●●●			
Protected wildlife site	●	●●●		●	●	●●●
Established tourist attraction	●	●●●	●	●●	●●	●●●

4.5.7 Outside of Derbyshire there is the Aire & Calder navigation facilitating a new flow of construction materials from Humber and Leeds which offers insight into future water freight in other areas. Similarly, it was identified that there are river wharves located in Besthorpe; however, these are outside the general Derbyshire study area.

4.5.8 Current evidence therefore shows that use of waterways is likely to be at a low level unless investment is made to make waterways navigable to a greater extent on a commercial level.

4.6 Environmental Factors

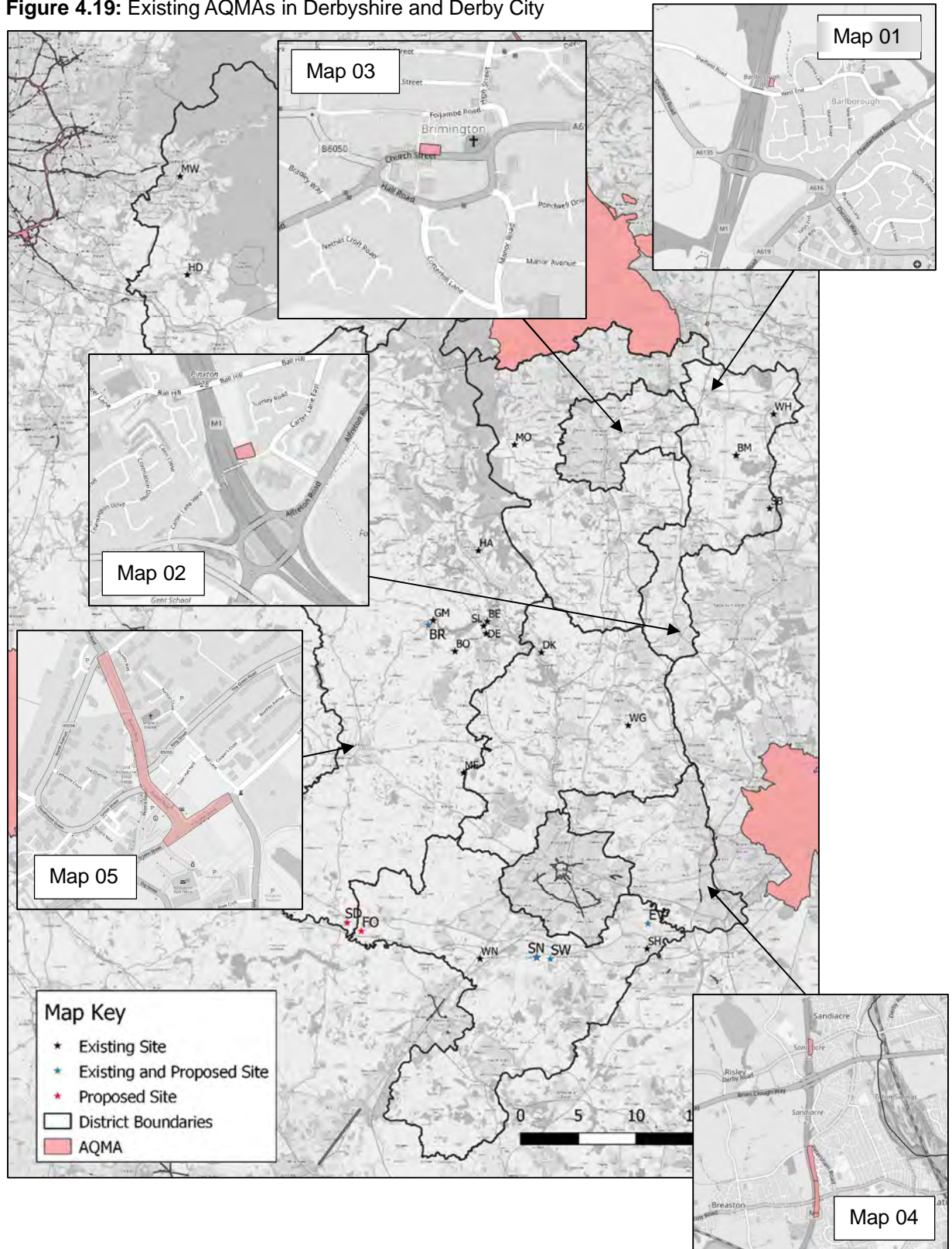
4.6.1 **Air Quality Management Area (AQMA):** An AQMA is an area that has been identified as likely to exceed the national air quality objectives for a specific pollutant (DEFRA). Pollutants can include: Nitrogen Dioxide (NO₂), Sulphur Dioxide (SO₂), Benzene and Particulate Matter (PM₁₀). If objectives are likely to be exceeded (or not) met local authorities must designate an AQMA and draw up an action plan aimed at reducing the level of the pollutant.

4.6.2 HGVs are a source of nitrogen oxides (NO_x), particulate matter (PM_x), Carbon Monoxide (CO) and sulphur dioxide (SO₂) amongst other environmental pollutants, and typically produce much higher levels compared to cars or LGVs. Indeed, a study by the DfT in 2017³ found HGVs to account for 21% of road transport NO_x emissions, despite only accounting for 5% of vehicle miles.

4.6.3 Figure 4.19 shows all AQMAs in the Derbyshire and Derby City region.

³ Freight Carbon Review 2017: Moving Britain Ahead (Department for Transport)

Figure 4.19: Existing AQMAs in Derbyshire and Derby City



4.6.4 Table 4.6 summarises the AQMAs in place within Derbyshire and Derby City, whilst Figure 4.20 shows the AQMAs in place within Derby City in greater detail.

Table 4.6: Existing AQMAs in Derbyshire and Derby City

Map reference	AQMA reference	Local Authority	AQMA Name	Description
01	374	Bolsover	Barlborough AQMA No.1	A single property adjacent to the A619 / A616 roundabout in Barlborough
01	514	Bolsover	Barlborough AQMA No.2	An area encompassing 5 residential dwellings on Orchard Close, Barlborough where the western property boundaries border the M1
02	8	Bolsover	South Normanton AQMA	The AQMA encompasses twelve properties and their gardens, 1-23 (odd) Carter Lane East, South Normanton on the east side of the M1 Motorway. The area extends 100m east of the main carriageway (not the sliproad).
03	1694	Chesterfield	No 1 AQMA	Numbers 4, 6, 8, 10, 12, 14, 16, and 18 Church Street, Brimington, S43 1JG
04	118	Erewash	AQMA No.1	Area of land encompassing five dwellings situated immediately to the east of the M1 motorway, either side of Derby Road Sandiacre to the north of junction 25.
04	119	Erewash	AQMA No.2	Area of land immediately to the east of the M1 motorway encompassing approximately 130 dwellings situated to the south of junction 25 in Long Eaton [note this area includes part of Derby Road, Long Eaton - the two Derby Roads are not contiguous].
05	Not available (declared May 2021)	Derbyshire Dales	AQMA No.2	Buxton Road, Ashbourne from the Windmill / North Lane junction to the junction of St Johns Street and St John's Street, Ashbourne from the junction of Cockayne Avenue and Park Road to 22 St John's Street.
Figure 4.20	20	Derby City	Derby NO2 AQMA No.1: Ring Roads	An AQMA encompassing the Inner and Outer Ring-Roads in the city, as well as some sections of radial roads and the entire length of Osmaston Road.
Figure 4.20	477	Derby City	Derby NO2 AQMA No.2: A52	Sections of the A52, Derby Road and Nottingham Road in Spondon.

Figure 4.20: Existing AQMAs in Derby City



4.6.5 Table 4.7 shows the percentage of HGVs recorded at each AQMA location, with data taken from the Department for Transport’s Road Traffic Statistics database (or from the C2 database if no data was available from the DfT database). Owing to the on-going COVID-19 pandemic impacting traffic volumes, data from 2019 has been used to ensure the robustness of data.

Table 4.7: Percentage HGVs at (or close to) AQMA sites

AQMA reference	AQMA name	Traffic count location	% HGVs
374	Barlborough AQMA No.1	M1 – approximately 1km north of the AQMA (Site ID: 73373)	16.5%
514	Barlborough AQMA No.2	A616 – approximately 250m west of the A616 / A619 roundabout (Site ID: 424)*	7.8%
8	South Normanton AQMA	M1 – Approximately 4.2km north of the AQMA (Site ID: 36006)	14.3%

AQMA reference	AQMA name	Traffic count location	% HGVs
1694	No 1 AQMA	A619 High Street / Church Street (approximately 125m east of AQMA) (Site ID: 4669)*	0.5%
118	AQMA No.1	M1 – Approximately 220m north of the AQMA (Site ID: 56005)	12.8%
119	AQMA No.2	M1 – Approximately 2.7km north of the AQMA (Site ID: 56005)	12.8%
Not available (declared May 2021)	(Ashbourne) AQMA No.2	A515 – Approximately 800m north of the start of the AQMA at A515 / Windmill Lane. (Site ID:37285)	9.75%
20	Derby NO2 AQMA No.1: Ring Roads	A601 (inner ring road) (Site ID: 27938) A5111 (outer ring road) (Site ID: 37810)	0.9% 1.8%
477	Derby NO2 AQMA No.2: A52	A52 (Site ID: 76085)	2.7%

* Data sourced from the C2 database

- 4.6.6 HGVs account for the highest proportion of all traffic on the M1 motorway, and therefore has a greater impact upon AQMAs located adjacent to the motorway network compared to the other AQMA sites. Notwithstanding, HGVs do not comprise a disproportionate number of total vehicles at existing AQMA locations.
- 4.6.7 It is understood that DCC has been liaising with the Joint Air Quality Unit (JAQU) regarding emissions on the A38 immediately east of Junction 28 in Bolsover, and air quality monitoring is also being undertaken in Ashbourne.
- 4.6.8 The A38 immediately east of Junction 28 in Bolsover has one road link projected to have an exceedance annual mean Air Quality Standard of $40\mu\text{g}/\text{m}^3$. In addition to air quality monitoring, and ANPR survey has also been undertaken at this location. The ANPR survey indicates that 7% of total traffic in this location is HGVs (rigid and articulated)⁴.
- 4.6.9 The Council is currently seeking further guidance from JAQU in relation to developing a number of measures aimed at reducing NO₂ concentrations on the A38 exceedance stretch to accelerate compliance from the now accepted year of 2023.
- 4.6.10 Section 5 considers whether HGV trips produced by each mineral site would likely route through, or near to, existing AQMAs.
- 4.6.11 **Clean Air Zones (CAZs):** CAZs refer to a geographical area where targeted action is taken to improve air quality, typically via charges for vehicles failing to meet a minimum emissions standards. Birmingham, for example, are introducing a CAZ within its inner ring road from 1st

⁴ https://uk-air.defra.gov.uk/library/assets/documents/no2ten/Bolsover_FINAL.pdf

June 2021. Once live, all non-compliant vehicles (approximately 25% of Birmingham's traffic) will be required to pay a daily charge to drive into or through the CAZ.

4.6.12 National air quality monitoring by Defra identified three areas within the Derby City Council administrative boundary that were (or were projected) to exceed EU Directive limits for NOx emissions. A CAZ was proposed for Derby City to address these air quality issue, however this has since been rejected in favour of traffic management measures.

4.6.13 The following traffic management measures are proposed to mitigate the NOx exceedances:

- Re-modelling the Air Quality emissions on A601 Eastgate section in more detail to demonstrate that emission levels are less than anticipated by the earlier (national) Air Quality modelling.
- A38 Kingsway is a strategic road and Highways England will be lowering this section of road into an underpass (A38 Derby Junction). The adjacent footways and cycleway (i.e. "receptors") will be re-routed onto the higher level. [Construction is expected 2021 to 2024.].
- Deter the use of A601 Stafford Street as a route choice for drivers – thereby reducing traffic flows – by:
 - Reducing the green-times allocated to the green light aspects at the junctions on either end of the Stafford Street link. Green times will be made adaptable by connecting these traffic-signal controlled junctions to DCiC's UTC system.
 - Providing capacity improvements on the alternative route; specifically at the A52 Ashbourne Rd / Uttoxeter Old Rd junction. [Note: this work is ongoing and will be completed about Oct 2021]
 - Encouraging the use of Uttoxeter Old Road (including repairs to the old railway bridge) as a route choice.

4.6.14 In relation to Minerals traffic, it is not expected that these measures will have an impact upon HGV movements, since the City within the outer ring road (formed by A5111 to the south / A38 to the west and north / A61 to the northeast / A52 east / A6 Raynesway to the east) is governed by a 3.5t Weight Restriction Zone (except for access) and therefore very few HGV movements occur through the city itself.

4.6.15 **Noise Area Action Plans:** Noise action plans provide a framework to manage environmental noise and its effects. They also aim to protect quiet areas in agglomerations (large urban areas) where the noise quality is good. Figure 4.21 shows the DEFRA Noise Action Planning Areas (Round 3) within Derbyshire and Derby City. The Round 2 sites have also been shown in Figure 4.22.

Figure 4.21: Existing Noise Action Planning Areas Round 3 (Derbyshire and Derby City)

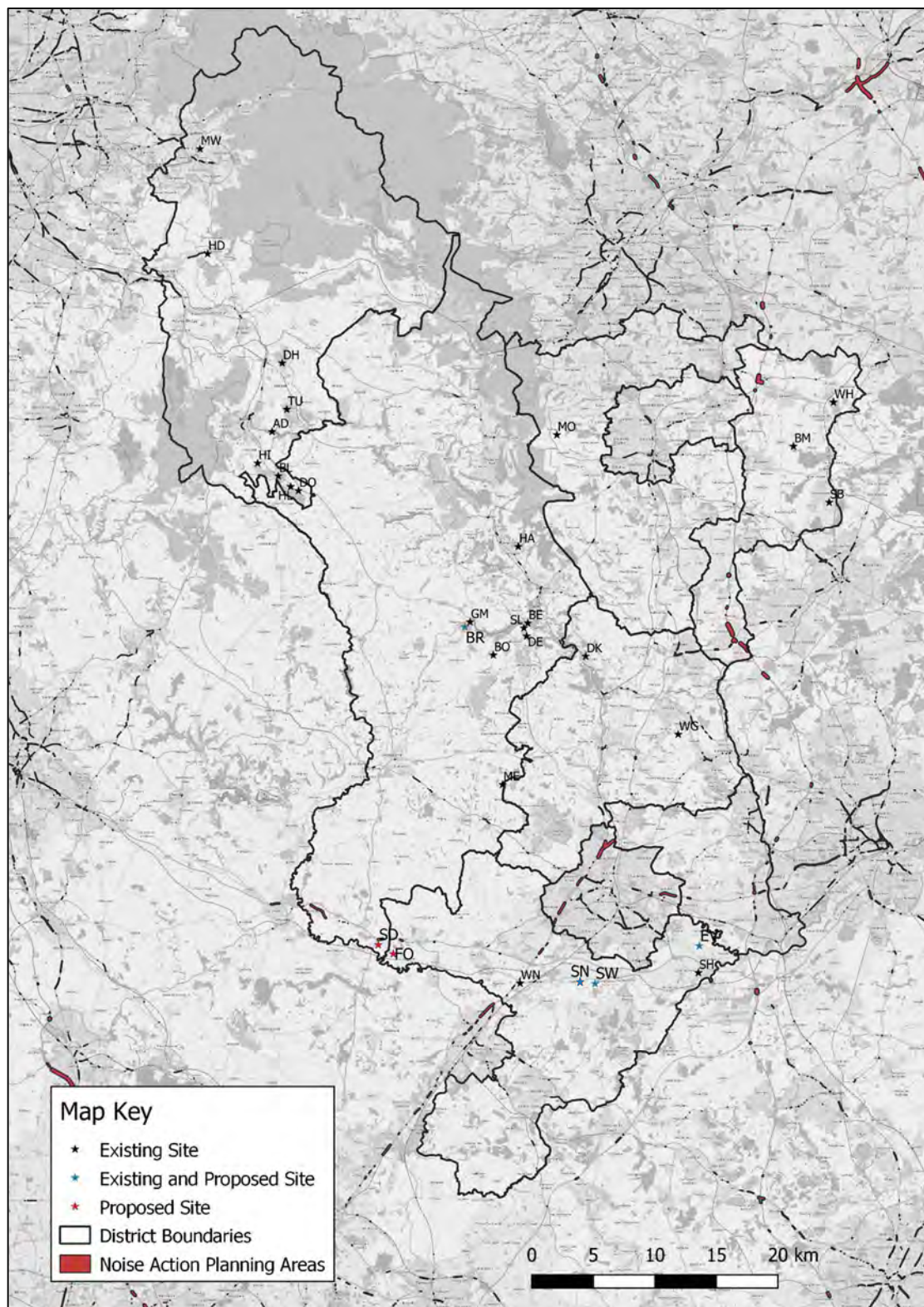
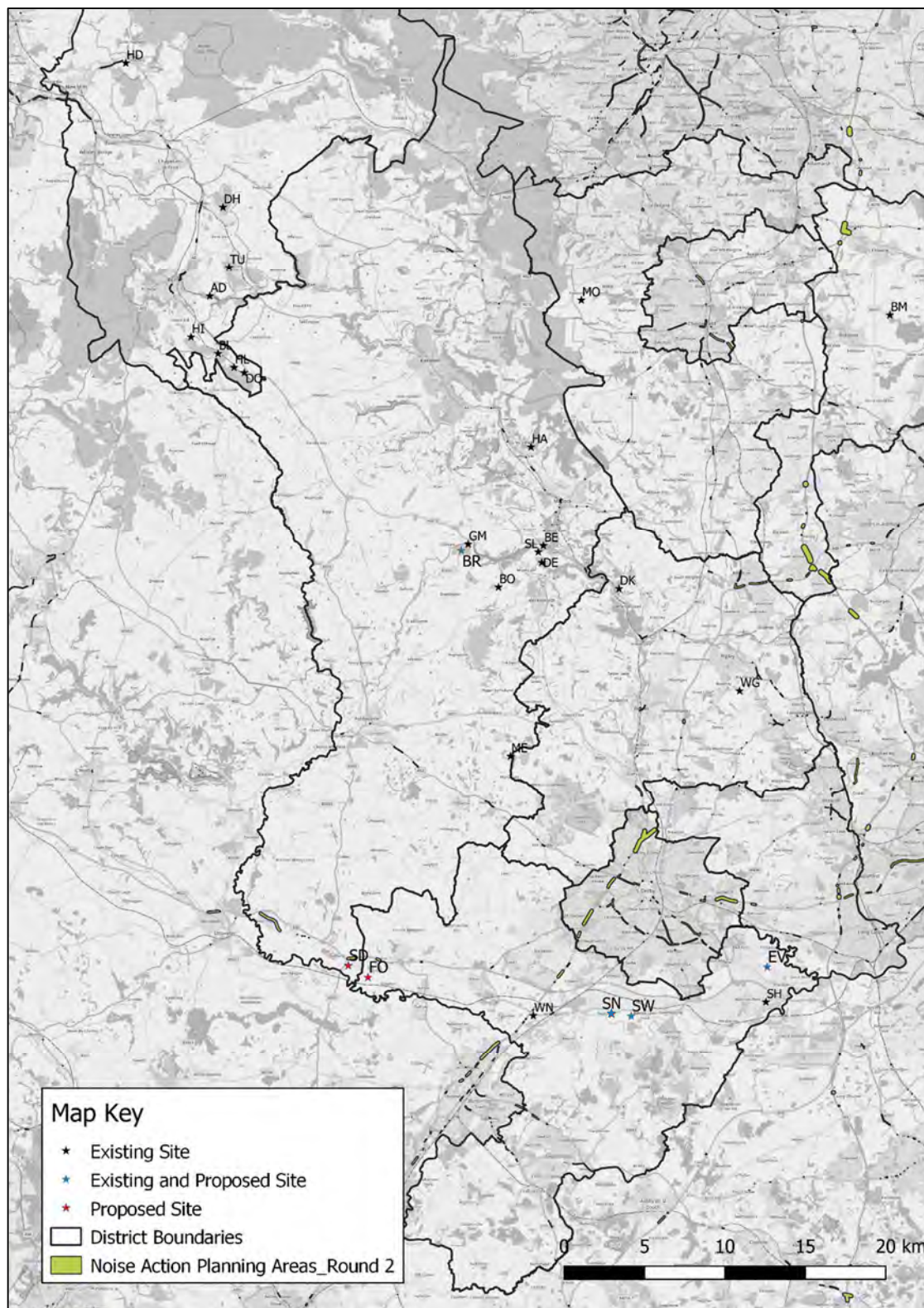


Figure 4.22: Existing Noise Action Planning Areas Round 2 (Derbyshire and Derby City)



4.6.16 The Noise Action Planning Areas are similar between Round 2 and Round 3. Notwithstanding, both Round 2 and 3 have been considered within further analysis.

- 4.6.17 Section 5 identifies whether each mineral site is located near to an existing Noise Action Planning Area, or indeed whether HGVs associated with the site would route through existing Noise Action Planning Areas.

Continues in Part 3