The Sir Robert Ogden Evans Property Partnership Ltd
Proposed Residential Development, Dunningley Lane, Tingley

Stage One Road Safety Audit Designer's Response

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Issue

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1 Introduction

This document sets out the Designer's Response to the Stage One Road Safety Audit (RSA1) that has been undertaken on the proposed arrangements for accessing the development site.

The audit team was led by Local Transport Projects, with representatives of Leeds City Council (LCC) and Aone+ on behalf of Highways England, and the site visit was carried out on 26 October 2017. The RSA1 report was received by Fore from LCC as the project sponsor on 29 November 2017.

The audit was based on the following Fore Consulting drawings:

- 3103/SK001/024B–026B: proposed access from A653 Dewsbury Road.
- 3103/SK003/004: proposed changes to M62 Junction including pedestrian and cycle improvements.
- 3103/SK004/011-015: proposed access from A654 Thorpe Lane.
- 3103/SK007/001-002: proposed changes to A650 Bradford Road / A654 Thorpe Lane / Smithy Road junction.

This RSA1 has been undertaken following consultation with LCC and Highways England through the planning application process, specifically in respect of the proposed access arrangements and proposed changes to the highway network to accommodate the development. In addition to this RSA, the following work has also been undertaken:

- A Safety Risk Assessment, undertaken in accordance with GD04/12. This was issued to the highway authorities on 2 June 2017, and was subsequently discussed at meetings on 13 June and 15 August 2017 respectively. This document effectively provided a comparison of risk to different populations associated with a number of identified options for improvement to the existing pedestrian and cycle facilities at Junction 28. It formed an appendix to the approved Audit Brief issued to the Audit Team.
- A Walking, Cycling and Horse Riding Assessment Report, undertaken in accordance with HD42/17. This was undertaken on specific request by Highways England. This process provides for an ongoing review of the scheme design to assess the integration of the scheme into the local and strategic transport networks.

As such, a significant amount of work in respect of the scheme demonstrated for the purposes of the RSA1 had been undertaken prior to, and alongside, the RSA1 process.

Specifically, this work was undertaken to inform the choice of route around Junction 28 to be improved. On this basis, and with reference to paragraph 2.21 of HD19/15, the strategic matter of route choice is considered to have been adequately considered outside the RSA process, and such strategic decisions were therefore omitted from the Audit Brief, as approved by the Project Sponsor.

Many of the identified recommendations have either been accepted or are considered to be of a relatively minor nature, that would typically be considered as part of the detailed design stage. All are addressed as part of this Designer's Response.

2 Items Raised in Previous Road Safety Audits

None

3 Stage One Road Safety Audit Designer's Response

Problem 3.1

Location:	A653 Dewsbury Road north of Topcliffe Lane
Summary:	Location of Toucan Crossing
Description:	The proposal indicates that the existing Toucan crossing on the northbound side of the A653 is to be located further north. This is likely to be further away from the pedestrian desire line, particularly for pedestrians walking between the Topcliffe Lane employment area to the west and the development. Pedestrians may elect to cross the carriageway in a straight line without recourse to the northbound carriageway Toucan with the consequent risk of contact with moving vehicles and likely injury.
Recommendation:	It is recommended that the Toucan crossing on the northbound side of the A653 Dewsbury Road should be located southwards, closer the Topcliffe Lane junction, and the traffic signal arrangements such that the toucan stage across the northbound carriageway of Dewsbury Road runs separately from the right turning traffic stage out of the development access, to ensure blocking back through the junction does not occur.
Designer Response:	Recommendation not accepted. The key pedestrian desire lines from the development site would be adequately accommodated by the relocated crossing as proposed: • Although pedestrians would be required to walk approximately 30m further to access Topcliffe Lane, they would be required to use one fewer crossings at the Topcliffe Lane junction to do so. As such, the impact of the relocated crossing on pedestrian utility is considered to be neutral. • The desire line towards the northbound bus stop on Dewsbury Road would be better accommodated by the relocated crossing than the existing arrangement (in which pedestrians would be directed to cross Topcliffe Lane additionally and walk approximately 40m further). It is noted that relocating the crossing to the south as recommended would bring the crossing closer to the existing priority-controlled exit from Topcliffe Lane. Adequate space is considered to be necessary at this point, to ensure visibility of signals at the crossing to drivers of vehicles emerging from Topcliffe Lane.

Based on the modelling of the proposed access junction, the right turn from the link road would receive 9 seconds of green time every cycle; if the crossing is demanded, and traffic held at the crossing at this time, the resulting queue would equate to 4 to 5 vehicles which, across the two lanes available at this location, would be easily accommodated without extending back through the Topcliffe Lane junction.

Alternatively, the crossing could be staged to such that it runs after the end of the green period at the link road, into the start of the green period for northbound traffic along Dewsbury Road (such that the main northbound flow along Dewsbury Road meets the back of any queue at the crossing). Regardless, it should be noted that the crossing need run only when demanded.

Deterrents to pedestrians crossing Dewsbury Road away from the relocated crossing (e.g. guardrailing) and signalling arrangements can be addressed as part of the detailed design.

Problem 3.2

Location:	New development access on A653
Summary:	Lack of stacking space
Description:	The proposed new access arrangements onto the A653 from the development site involve providing a new signalised access out from the highways depot, approximately 35 metres east of the entry from the A653. If vehicles entering the new development access road are stopped by a red signal to allow highway depot vehicles to exit they may back up through the new junction onto the A653 itself. This could bring them into contact with a moving vehicle on the A653 with possible injury to vehicle occupants and also to any pedestrians attempting to cross the new access road between queued-back vehicles.
Recommendation:	The proposed new access arrangements onto the A653 from the development site involve providing a new signalised access out from the highways depot, approximately 35 metres east of the entry from the A653. If vehicles entering the new development access road are stopped by a red signal to allow highway depot vehicles to exit they may back up through the new junction onto the A653 itself. This could bring them into contact with a moving vehicle on the A653 with possible injury to vehicle occupants and also to any pedestrians attempting to cross the new access road between queued-back vehicles.
Designer Response:	Recommendation noted. The proposed arrangements have been discussed and agreed in principle with Highways England and representatives of their Managing Agent who operate the depot. The signalised exit is required to accommodate efficient access to the motorway in an emergency, and would be associated with a hurry call at the Topcliffe Lane junction to ensure rapid access to Junction 28.

Following discussion with LCC, the emergency exit arrangements would be used only when required. Based on information provided by Highways England's Managing Agent and traffic survey data gathered for the purposes of the Transport Assessment, such emergency movements are infrequent. The majority of arrivals and departures at the depot are not related to emergencies, and would be accommodated adequately via the proposed priority junction access to the east of the depot. There would therefore be no requirement to use the signalised exit unless in an emergency.

Should a vehicle leave the depot in an emergency, it is envisaged that the hurry call would hold the Dewsbury Road and Topcliffe Lane approaches at a red signal, to allow a 'green wave' from the depot to Dewsbury Road towards Junction 28. The effect of this is that it would not be possible for traffic to turn into the link road in the eastbound direction at the same time as a vehicle departs in an emergency. On this basis, eastbound queues would be managed without impacts extending back to Dewsbury Road.

The precise signalling arrangements will be addressed as part of the detailed design and implementation of the access junction.

Problem 3.3

Location:	Bus gate facility on A653 Dewsbury Road
Summary:	Issue with buses attempting to reach the right turn lane
Description:	The bus gate is shown as being both signalised and separated from the main carriageway by an island and hatching (no signal staging information was provided). Buses leaving the bus gate wishing to use the offside lane (as observed on site) will have to negotiate three traffic lanes which could be problematic if they are having to deal with queuing traffic, with the risk of shunts or side swipes, collisions and injury to vehicle occupants and / or bus passengers.
Recommendation:	It is recommended that the bus gate signal stage is such that buses can reach all lanes of the A653 southbound to the interchange while other southbound traffic is held at the first stop line.
Designer Response:	Recommendation accepted. The proposed arrangement is based on a scheme previously identified by LCC for implementation as part of a planning consent associated with the Capitol Park development, to the west of the junction. The precise signal staging arrangement will be addressed as part of the detailed design and implementation of the works.

Problem 3.4

Location:	New development access junction with A653 Dewsbury Road
Summary:	Distance between give way marking and stop line
Description:	The proposed Left turn from development / depot into A653 south. There's only a short distance between the pedestrian crossing stop-line and the junction give-way marking. For the majority of the time drivers will see a green traffic signal and may mistakenly believe this gives them priority to turn out on to the A653, or worse, when the crossing is used and driver sees a red signal turn to green. The likelihood of this is increased during periods of adverse weather or when the give way marking begins to wear away through constant over running.
Recommendation:	It is recommended that the give way line is removed and ensure that the signal staging removes the potential for conflict with other phases/stages.
Designer Response:	Recommendation accepted. The signalling arrangements have been reviewed, and it is considered that they can be accommodated as recommended. The revised layout is demonstrated on Fore Consulting drawing 3103/SK001/024C. The associated TRANSYT model has been updated, and is submitted to LCC and Highways England under separate cover.

Problem 3.5

Location:	New development access junction with A653 Dewsbury Road
Summary:	Absence of stagger at pedestrian crossing
Description:	The pedestrian crossing over the proposed development (near the Highways Depot) has no stagger over two of the links. Pedestrians crossing may be tempted to cross these lanes in one single movement, not looking for vehicles turning into or out of the development.
Recommendation:	It is recommended that the northern most link is moved further into the link road to introduce a stagger.
Designer Response:	Recommendation accepted. The proposed layout has been amended accordingly and demonstrated on Fore Consulting drawing 3103/SK001/024C.

Problem 3.6

Location:	New development access junction with A653 Dewsbury Road
Summary:	Tight entry/exit to depot
Description:	The proposed eastern entry/exit from the depot from local road into depot is very tight. The swept path drawing supplied shows that opposing long vehicles could not pass each other safely on the bend. The depot access, is in constant use by traffic officers and will, at times be required to pass large or abnormal loads (periods of frequent gritting etc.), with an associated risk of head on and side swipe collisions. The access should be designed with a geometry which allows free flow of all vehicles.
Recommendation:	It is recommended that formal consultation with A-one+ / Highways England is undertaken as part of the detailed design process, to establish the exact level of usage and the required geometry.
Designer Response:	Recommendation accepted. Based on information derived from traffic surveys undertaken at the junction, movements by large vehicles are infrequent, and it is extremely unlikely that large vehicles would need to pass each other in practice. Notwithstanding this, further formal consultation with Aone+ and Highways England will be undertaken as part of the detailed design process.

Problem 3.7

Location:	A653 Dewsbury Road south of Topcliffe Lane
Summary:	Pedestrians crossing the A653 south of Topcliffe Lane
Description:	Pupils leaving Woodkirk Academy located south west of Junction 28 may choose to use the pedestrian facilities on the west side of the interchange to access the new development, which will involve them walking along the west side of the A653 Dewsbury Road towards the new development access. There is potential for some pupils to cross Dewsbury Road south of the new junction where there are no crossing facilities rather than walk further north the junction to the proposed new Toucan location. This could bring them into conflict with moving traffic on Dewsbury Road and likely injuries.
Recommendation:	It is recommended that pedestrian crossing facilities should be provided south of the junction of the A653 new development access road, to enable pedestrians to cross here safely.
Designer Response:	Recommendation noted. As part of discussions with Highways England and LCC, a Safety Risk Assessment in accordance with GD04/12 was undertaken to consider

existing pedestrian routes to facilities and amenities the south of the motorway, and options for improvement.

Pedestrian routes around the west side of Junction 28 roundabout were considered initially. It is considered that the route around the west of Junction 28 would not be used by students travelling to and from Woodkirk Academy, given the routes which students use between the south side of Junction 28 and the school entrance, the overall length of the route and the number of crossing points (10 off). Improvements were discounted on the basis that they would poorly serve desire lines to other local amenities (the majority of which are located east of Junction 28).

Furthermore, improving the route around the west side of Junction 28 is likely to require signalisation of the existing uncontrolled crossing on the westbound M62 entry slip road, which in turn would adversely affect the operation of the Junction 28 roundabout.

Following the GD04/12 process and in consultation with Highways England and LCC, alternative options for safely accommodating pedestrian movements through Junction 28 were taken forward. As such, it is not considered necessary to provide a crossing of Dewsbury Road south of the junction with Topcliffe Lane.

Problem 3.8

Location:	A653 Dewsbury Road north of Topcliffe Lane
Summary:	Lack of safe cycle merge facility
Description:	The shared footway / cycleway facility on the western side of the A653 Dewsbury Road travelling north ends abruptly as it re-enters the carriageway at the start of the bus layby and immediately after the proposed crossing. There is a possibility that drivers travelling north may be unaware of cyclists merging with the main carriageway and may come into contact causing injury to cyclists.
Recommendation:	It is recommended that suitable facilities should be provided to enable cyclists to safely re-enter the carriageway and approaching drivers warned in advance of this possibility.
Designer Response:	Recommendation accepted. The applicant proposes to provide a new section of shared footway / cycleway along Dewsbury Road between the existing provision north of the junction with Topcliffe Lane and the junction with Wide Lane. This remove the need for cyclists to re-enter the carriageway at this location.

Problem 3.9

Location:	A653 junction with the Interchange
Summary:	Carriageway widening and lack of lane designation
Description:	The northbound approach to the A653 from the interchange is proposed to be widened on its offside to increase capacity for right turning vehicles to the new development. However, the new geometry could encourage drivers to follow the alignment of the offside kerb even if they intend to carry straight on; only when they reach the stop line will they realise that they are in a right turn only lane. Drivers may then undertake rapid lane changing with the consequent possibility of side swipes with other vehicles, resulting in injuries to other vehicle occupants and in particular two wheeled vehicle riders.
Recommendation:	It is recommended that the kerb line from the roundabout splitter island is continued as per the present layout as far as the straight section, before forming a taper to the right for the right turn lane, with a bifurcation arrow to indicate the right turn lane to traffic.
Designer Response:	Recommendation not accepted. The extension to the right-turning lane is required in capacity terms to accommodate traffic associated with the proposed link road (which in turn would remove some circulating traffic from Junction 28 and therefore represent a benefit in terms of operation). This problem can be addressed through signage and lane markings, which will be addressed as part of the detailed design.

Problem 3.10

Location:	Station Lane junction with Dewsbury Road
Summary:	Proximity of Station Lane to stop line and pedestrian crossing
Description:	The stop line on the southbound Dewsbury Road approach to the roundabout is to be moved further north to accommodate the proposed pedestrian crossing. This may result in traffic exiting Station Lane onto Dewsbury Road not seeing the signals with a risk of passing through a red light coming into contact with opposing traffic and injury to vehicle occupants, or contact with pedestrians on the crossing and their subsequent injury.
Recommendation:	It is recommended that adequate intervisibility is provided to the southbound signal heads for drivers exiting Station Lane.
Designer Response:	Recommendation noted. Station Lane itself is a cul-de-sac, accessed only from Dewsbury Road. In practice drivers entering the road will be approaching via Dewsbury Road

from the southbound carriageway, and will therefore be familiar with the layout of the junction and the proximity of the signals upon leaving.

Notwithstanding this, it is suggested that this problem could be addressed by providing signage to indicate the proximity of the signals to drivers approaching Dewsbury Road on Station Lane. This can be addressed as part of the detailed design of the pedestrian improvement scheme.

Problem 3.11

Location:	M62 Junction 28 interchange
Summary:	Pedestrian / cycle route through the interchange safety issues
Description:	The current and proposed cycle / pedestrian facilities through the interchange both involve pedestrians and cyclists travelling adjacent to the carriageway, crossing several lanes of traffic via signalised facilities. At present the facilities appear to be used infrequently by pedestrians and cyclists; however, once the development is built and children are using it to reach both the Primary School and the Academy, including children in groups, there is an increased risk of exposure to fast moving traffic using the interchange. Although some improvements / upgrades are proposed to the facilities for pedestrians and cyclists around the junction, given the envisaged large increases in pedestrian / cycle flows there is an increased risk of these groups being struck by motor vehicles with resulting injuries. In addition, there is a chance that the route will become slippery due to leaves falling from the numerous trees on the roundabout's central island.
Recommendation:	It is recommended that alternative pedestrian and cycle facilities should be provided to cross the M62 which do not involve using the present interchange and which will be convenient for children travelling between the new development and the Primary School and Academy.
Designer Response:	Recommendation not accepted. With reference to the mandatory requirements set out in paragraph 2.21 of HD19/15, Road Safety Audit Teams must make allowance for the fact that strategic decisions regarding route choice (and other matters including standard of provision) already reflect an appropriate balance of a number of factors including road safety. These factors would also include deliverability. Route choice specifically has been considered in detail prior to this RSA separately through undertaking a Safety Risk Assessment in accordance with GD04/12, in consultation with LCC and Highways England. As such, the strategic elements of the scheme are considered to have been sufficiently addressed prior to the RSA. On this basis, it was not considered necessary for the RSA to cover route choice, and therefore no allowance for this was specified in the Audit Brief (the Safety Risk Assessment was provided as part of the Audit Brief package), or

subsequently specifically requested either by LCC (as the Project Sponsor) or Highways England (as party to the RSA).

Notwithstanding this, the recommendations of the audit team have been considered for the purposes of this RSA, as follows:

Existing Usage of Junction 28 by Pedestrians and Cyclists

A fully classified turning count survey was undertaken at M62 Junction 28 on 7th March 2017. This showed that around 60 cyclists use Junction 28 during the AM and PM peak periods, with approximately 40 travelling from north to south of the motorway (and vice versa) during the peak periods. Although no daily surveys have been undertaken, based on the peak period usage it is expected that there would be between 150 to 200 cycle movements in total using the junction per day, of which 100 to 125 would be journeys from north to south (or south to north) of the motorway. Based on observations of the survey videos, it appears that cyclists tend to use the carriageway rather than the existing off-road footway / cycleway provision.

No specific pedestrian counts have been undertaken. However, based on observations made on site visits, it is clear that existing pedestrian movements throughout the junction as a whole are limited. The videos collected during the traffic surveys used for the purposes of the Transport Assessment indicate around 5 pedestrian movements via the footway adjacent to the eastern circulatory carriageway (from the north to the south of the motorway and vice versa) during both peak periods (i.e. 10 in total). As such, it is expected that there are around 25 pedestrian movements in both directions under the motorway during a day. It is noted that historic uses in the vicinity (specifically the former White Bear pub which closed in October 2013 and has subsequently been demolished) would have generated some pedestrian demand on routes around Junction 28; as such, it is possible that the current levels of pedestrian demand observed are relatively low.

Based on accident data recorded over the most recent 5-year period (up to 27 November 2017), there were no accidents recorded at Junction 28 involving pedestrians. However, 2 accidents were recorded involving cyclists in the vicinity of the Bradford Road and Dewsbury Road approaches, both of whom were struck by vehicles while using the carriageway, rather than the existing off-road provision.

Overall, given that the existing off-road provision appears to not be sufficiently attractive for cyclists travelling via Junction 28 to use (particularly between the north and south of motorway), resulting in cyclists continuing to use the carriageway, and a number of accidents as highlighted above, it is considered that the proposed scheme will be of clear benefit to existing users, as well as future residents of the development.

Pedestrians / Cyclists Generated by the Development Via Junction 28

The following should be noted with regard to options to travelling to the schools in question:

- There are clear alternative routes for travelling to Blackgates Primary School on foot or by cycle, avoiding Junction 28. Thorpe Lane and potentially the link to Thorpe Lane via Dunningley Lane (through the development) will be a more direct route for the majority of future residents of the development site. Furthermore, the proposed diversion of the 117 bus service through the site would provide an alternative option for travelling to Blackgates Primary School for all residents of the development. The 117 bus service stops on Smithy Lane directly adjacent the entrance to the school.

- Students travelling to Woodkirk Academy will have the option of using high-frequency bus services along Dewsbury Road to stops in the vicinity of Rein Road, within a short walk of the main entrance to the school. Those living at the eastern side of the development would also have the option of walking via Thorpe Lane to Bradford Road approaching Junction 28, south of the motorway.

Given the above, it is clear that those travelling to the identified schools on foot have options other than via Junction 28 on foot from the north of the motorway to the south.

For the purposes of the GD04/12 assessment, it was estimated that the development would generate the following journeys through Junction 28:

- Journeys to Blackgates Primary School will predominantly be made via Thorpe Lane, Dunningley Lane (to Thorpe Lane) or by public transport, rather than via Junction 28, given that the route is considered more direct and attractive for the majority of the development site. The appellants have been and continue to be willing to accommodate a primary school within the appeal site if needed.

- Based on information provided by the Local Education Authority for the purposes of the planning application, it is anticipated that the proposed development will generate demand for secondary school provision equivalent to 0.5 forms of entry, which equates to approximately 125 students in total. A sensitivity test was undertaken for the purposes of the GD04/12 assessment based on local population statistics derived from the 2011 Census, and on this basis, it was estimated that a total 178 secondary school or sixth form-aged students could be generated by the development. Secondary school-aged children would have the option of attending Woodkirk Academy, Morley Academy, Cockburn School, Rodillian Academy, South Leeds Academy, or Bruntcliffe Academy. Only journeys to Woodkirk Academy would potentially require travelling via Junction 28, and given the range of options it is conservatively estimated that 75% of students generated by the development would attend Woodkirk Academy. Based on mode share monitoring undertaken as part of the Academy's travel plan provided by LCC, 40% of students attend Woodkirk Academy on foot, and therefore 38 students could reasonably be expected to travel on foot or by cycle to Woodkirk Academy. The Thorpe Lane route would be convenient for residents of the easternmost section of the development, and therefore it is assumed that 80% of students travelling on foot to Woodkirk Academy would do so via Junction 28. Overall, it is

anticipated that in practice 30 students (or around 45 students assuming the local sensitivity test assumptions are applied) students[1] would travel between the development and Woodkirk Academy on foot or by cycle via Junction 28 per day, which equates to between 60 and 90 trips through a weekday.

- It should also be noted that the peak times for students travelling to and from Woodkirk Academy do not fully align with the times of peak traffic flows. For instance, only a proportion of students would be travelling via Junction 28 during the peak traffic conditions during the PM peak period; a peak hour of 16:30 to 17:30 was identified for the Transport Assessment, which is likely to follow the main evening school travel peak of 15:00 to 16:00.

- There are no other amenities to the south west of the development site beyond Junction 28 that are likely to generate significant movements on foot or by cycle from the development site. The key local facilities (including Leigh View Medical Practice and adjacent Pharmacy) are located east of Blackgates Primary School, and therefore the route via Thorpe Lane will be more attractive route for future residents, rather than Junction 28.

On the basis of the above, **it is anticipated that up to 100 to 125 pedestrian or cycle movements per day could be generated by the development through Junction 28**[2]. Although this represents a significant increase in proportional terms compared with the existing situation (up to approximately 125 to 150 pedestrian and cycle movements per day from the north of the motorway to the south and vice versa through Junction 28), the likely additional number of trips on foot or by cycle associated with the development is represent a modest increase in absolute terms.

Leaves / Maintenance

It is accepted that the footway surface could be slippery due to leaves falling from trees on the roundabout's central island. It is suggested that this can be addressed by providing guardrailing along the kerbside edge, to stop pedestrians falling into the carriageway. The preliminary layout has therefore been amended to make allowance for guardrailing and maintain a footway / cycleway width generally of 3.0m, as demonstrated on Fore Consulting drawing 3103/SK003/004B. The precise guardrailing requirements will be addressed as part of the detailed design process.

Alternative Pedestrian and Cycle Facilities

The feasibility of alternative pedestrian routes across the M62 in the vicinity of Junction 28 was considered as part of the Safety Risk Assessment prepared in accordance with GD04/12. Specifically, the

[1] 125 students in total (178 students based on the sensitivity test assumptions) x 75% assumed to attend Woodkirk Academy x 40% travelling on foot or by cycle = 38 (53) students assumed to travel on foot to Woodkirk Academy.
80% assumed to use the route via Junction 28 rather than Thorpe Lane = 30 (43) students assumed to travel on foot to Woodkirk Academy via Junction 28.
[2] Equates to between 30 and 45 return journeys by students living at the development towards Woodkirk Academy per weekday, plus an assumed allowance for other journey purposes on foot.

feasibility of a bridge or underpass across the M62 and associated slip roads was considered, but two key issues were identified:

- The bridge or underpass may not necessarily accommodate pedestrian desire lines to Woodkirk Academy, given the requirement to retain the necessary level over (or under) the motorway. In turn, this may lead to pedestrians and cyclists continuing to use the at-grade facilities at Junction 28.

- A bridge structure or underpass will require acquisition of a significant amount of land controlled by third parties, and is considered undeliverable within the scope of the application.

Consequently, in consultation with LCC and Highways England through the GD04/12 process, options for accommodating pedestrian and cycle movements safely through Junction 28 at grade that represent technically feasible and deliverable options have been taken forward.

Summary

Notwithstanding that strategic route choice was addressed separately as part of the GD04/12 process in consultation with LCC and Highways England, the identified arrangement for improving pedestrian and cycle facilities has been reviewed in accordance with the points raised by the Audit Team.

The revised preliminary layout is demonstrated on Fore Consulting drawing 3103/SK003/004B, incorporating allowance for guardrailing adjacent the kerbside, while retaining a footway / cycleway width of 3.0m. The precise guardrailing requirements will be addressed as part of the detailed design process.

In addition to accommodating the needs of future residents of the development, the proposed scheme represents an improvement to the existing off-road provision for other pedestrians and cyclists using Junction 28, in turn acting to encourage cyclists to use off-road provision, rather than the carriageway, which represent a clear benefit in terms of road safety.

Problem 3.12

Location:	Interchange central island
Summary:	Location of proposed pedestrian /cycle facility on the central island not on desire line
Description:	The proposed pedestrian /cycle facility is intended to be located on the central island for most of its route to avoid users having to cross the M62 slip roads. However, the Team considered that there may be reluctance for users to do this as crossing on to the central island may not be the natural desire line. Users may elect instead to try and use the route of the existing facilities. As the existing crossing points would now be uncontrolled (notwithstanding any anti-pedestrian surfaces / barriers which may be provided to prevent access) this would bring them into conflict with vehicles using the slip roads. Also, the present arrangement involves crossing a maximum of three traffic lanes at any one point, the proposed arrangement involves crossing five lanes of the circulatory carriageway increasing the risk of exposure to contact with vehicles and subsequent injury to cyclists / pedestrians, particularly when crossing in groups. Finally, there is the potential for signal failure which would mean pedestrians / cyclists having to cross the circulatory carriageway through moving traffic with an increased risk of contact and injury.
Recommendation:	It is recommended that alternative pedestrian and cycle facilities should be provided to cross the M62 which do not involve using the present interchange and which will be convenient for children travelling between the new development and the Primary School and Academy.
Designer Response:	Recommendation noted. As highlighted in response to Problem 3.11, and with reference to the mandatory requirements set out in paragraph 2.21 of HD19/15, Road Safety Audit Teams must make allowance for the fact that strategic decisions regarding route choice (and other matters including standard of provision) already reflect an appropriate balance of a number of factors including road safety. These factors would also include deliverability. Notwithstanding this, the recommendations of the audit team have been considered for the purposes of this RSA, as follows: **Choice of Routes Inside / Outside the Circulating Carriageway** The views of the Audit Team are acknowledged, and were similarly raised through the GD04/12 process. However, the identified route inside of the circulating carriageway provides the following key benefits compared to improving the route around the outside of the carriageway: • Introducing signal controls on the existing uncontrolled crossing on the eastbound M62 entry slip road would be required. Although such a scheme is technically feasible, there are likely to be impacts in terms of capacity on the southbound Dewsbury Road approach (it is the clear view of the highway authorities that the southbound Dewsbury Road approach and associated circulatory carriageway will need to be held on red to accommodate demands for a controlled

crossing on the slip road). Instead, the route via inside of the circulating carriageway can be managed on a 'walk-with traffic' basis, and will therefore be effectively neutral in terms of vehicular capacity.

- Typically, users of pedestrians / cycle routes on the outside of a circulating carriageway (as in the existing situation) would be at risk of being struck by vehicles in the event of a loss of control. In comparison, providing for pedestrians and cyclists on the inside of the circulating carriageway effectively minimises this risk.

- In the case of students travelling to Woodkirk Academy (i.e. via Dewsbury Road), the proposed route inside the central island would require the use of fewer controlled crossings, and would be a shorter distance, compared with the route around the outside of the circulating carriageway. A more direct route would be more attractive to users. This is summarised in the table below.

	Route Around Circulating Carriageway	
	Outside (existing)	Inside (proposed)
Distance (m)	485m	445m
Effective Width of Facility (m)	1.2 – 2.3m 2.2m under the motorway (without guardrail)	3.0m 2.2m under the motorway (with guardrail)
Number of crossing points	6 (including 1 uncontrolled)	5 (all controlled)
Number of Lanes crossed	15	16

- The proposed route would not significantly affect those travelling to Bradford Road from Dewsbury Road to the north (the number of existing pedestrians making this journey is negligible and the proposed development is not anticipated to change this). Although one more crossing would be required, the additional distance is limited (around 40m), and pedestrians / cyclists would not be required to use the existing uncontrolled crossing on the eastbound M62 entry slip road; this is considered to represent a clear safety benefit. There would be no impact on other pedestrian routes through Junction 28.

Furthermore, in respect of the identified route via the central island, TD86/03 makes the following points:

3.20: The location of at-grade cycle or pedestrian crossings, whether controlled or uncontrolled, at slip roads of grade-separated intersections should be avoided wherever possible, particularly where approach speeds are likely to be in excess of 40mph. The crossings should be positioned away from locations where drivers might be

applying maximum acceleration TA 67 (DMRB 5.2.4). In such circumstances segregated facilities may be more appropriate.

Paragraphs 3.25 to 3.27 highlight the potential benefits of adopting 'walk with traffic' pedestrian facilities, and paragraphs 3.48 and 3.52 make the following points in relation to the potential benefits of using the central island:

3.48 In comparison with single node junctions, these [i.e. signal-controlled roundabout] junctions will occupy a larger surface area and therefore result in greater disruption of pedestrian desire lines.

3.49 To offset this, the large junction will generally incorporate more conflict points that can be used to the advantage of pedestrians. ***Each of these gives an opportunity for specifically signalled walk-with-traffic pedestrian facilities across both the entry lanes and the circulatory carriageway. The large central island gives opportunities to provide relatively direct routes across the junction.***

3.50 ***It is not always possible to provide walk-with traffic facilities across the exit lanes of the junction. If the pedestrian desire lines indicate a need for facilities across the exit lanes then exit Puffin/Toucan crossings may be considered although these could have an impact on the overall capacity of the junction.***

As such, the principle of providing pedestrian and cycle facilities via the central island (as an alternative to outside the circulating carriageway), and adopting a "walk with traffic" approach, accords with relevant standards.

Widening of Circulating Carriageway

It should be noted that the proposed widening of a section of the circulating carriageway to 5 lanes (and associated extension of the existing pedestrian crossing at this point) forms part of Highways England's proposed Congestion Relief Fund scheme. It has been agreed with Highways England that the scheme is not required to accommodate the proposed development. As such, the safety implications of the extended crossing have therefore been addressed as part of development of the CRF scheme, outside the scope of this RSA.

Summary

Notwithstanding that strategic route choice was addressed separately as part of the GD04/12 process in consultation with LCC and Highways England, the identified scheme for improving pedestrian and cycle facilities has been reviewed in accordance with the points raised by the Audit Team.

The revised preliminary layout is demonstrated on Fore Consulting 3103/SK003/004B, incorporating allowance for guardrailing adjacent the kerbside (while retaining a footway / cycleway width of 3.0m).

Furthermore, it is proposed that guardrailing and lighting improvements, as well as adequate means of preventing pedestrians from using the existing route (for instance, including but not limited to: deterrent paving, wayfinding signage, guardrailing or physical barriers) will be provided as part of the scheme. These matters will be addressed as part of the detailed design process.

Problem 3.13

Location:	Crossing points to central island
Summary:	Difference in level between the roundabout's central island and existing carriageway
Description:	Where the crossing points are proposed there is a large difference in level between the existing carriageway and the proposed footway cycleway on the roundabout's central island. Any level difference needs to be minimal as there is a risk of slips and falls, particularly with mobility impaired users and during inclement weather, with subsequent injury to pedestrians and cyclists.
Recommendation:	It is recommended that any difference in level and gradient is kept to a minimum. See also Problem 3.11 and 3.12 above.
Designer Response:	Recommendation accepted. It is considered that the level differences can be accommodated and managed, and this issue will be addressed in full as part of the detailed design.

Problem 3.14

Location:	Circulatory carriageway
Summary:	Large number of worded destination road markings on the carriageway
Description:	At various locations on the M62 exit slip roads and on the circulatory carriageway of the junction, additional worded lane marking destinations have been added to the drawing provided for audit (e.g. southbound roundabout approach to M62 westbound off-slip now shows 8 rows of markings compared with 4 existing). Because of the large number of lanes and amount of text it is possible that drivers may be distracted trying to read the various destinations particularly if covered by queueing vehicles ahead. This may result in drivers failing to comply with traffic signals or last-minute lane changing, bringing them into contact with other road users via shunt or side swipe collisions and subsequent injury to vehicle occupants.
Recommendation:	It is recommended that lane destinations markings should be kept to a minimum and supplemented by vertical traffic signs where appropriate.
Designer Response:	Recommendation accepted. The lane destination markings highlighted on the drawings are indicative only. The precise details of lane markings (including locations of markings, arrow types and proposed destination wording) and vertical signage will be addressed as part of the detailed design.

Problem 3.15

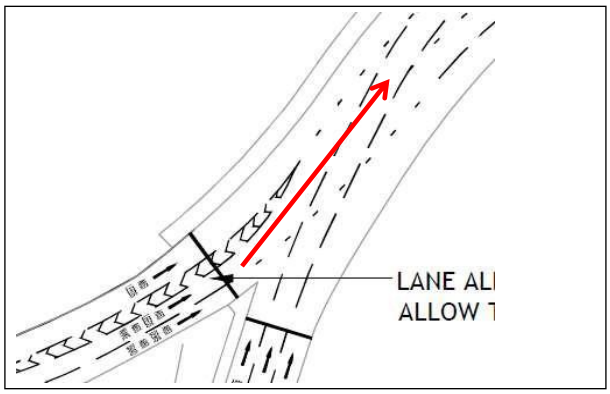
Location:	M62 westbound slip road
Summary:	Conflicting road marking information
Description:	The drawings provided show the central lane of the M62 westbound off slip road to have the destinations 'A650 BRAD / A653 DEWS' on the carriageway. This is confusing as a driver taking this central lane to travel to A653 Dewsbury would have to then change lane to the left upon entering the roundabout and could involve motorists executing last minute lane changing with possible sideswipes with other vehicles and injury to vehicle occupants.
Recommendation:	It is recommended that the feasibility of this lane arrangement is further investigated.
Designer Response:	Recommendation accepted. The reference to 'A653 DEWS' in lane 2 on the drawing is erroneous and has been removed. Fore Consulting drawing 3013/SK003/004B demonstrates the revised arrangements. This change does not affect the modelling work undertaken, which assumes southbound traffic to Dewsbury is allocated to lane 1 on the westbound exit slip road.

Problem 3.16

Location: M62 eastbound exit slip to the A653

Summary: Extra lane to Leeds conflicts with warning line

Description: The drawing provided shows two lanes of traffic to be signed from the M62 eastbound slip road towards Leeds along the A653. Drivers in the southernmost of these two lanes are separated from the nearside lane by an area of hatching so once in that lane they will not be encouraged to cross into the nearside lane as they approach the circulatory carriageway. This means however they will have to cross a section of Diagram 1004 warning line on the circulatory carriageway in order to access the A653 to Leeds. Some drivers may be reluctant to cross a warning line and may instead try to enter the nearside lane as they move into the circulatory carriageway with possible sideswipes and collisions with other vehicles already in that lane and possible injuries to vehicle occupants.



Recommendation: It is recommended that a section of the Diagram 1004 warning line should be removed from the circulatory carriageway in this location to avoid drivers from the M62 eastbound slip central lane having to cross it and that the lining arrangement after the stop line should be reviewed.

Designer Response: Recommendation accepted.

The lane markings shown on the drawing is indicative only. The precise details of lane markings will be addressed as part of the detailed design.

Problem 3.17

Location:	A654 Thorpe Lane
Summary:	Insufficient footway width
Description:	The footway adjacent to the A654, linking the development to the settlement of Tingley to the south (including Blackgates Primary School), is only 1.0 to 1.2 metres wide. This is too narrow to safely accommodate an increase in pedestrian use, particularly those using prams / pushchairs or wheelchairs. This could result in pedestrians stepping onto the A654 carriageway where they risk exposure to motorised vehicles and subsequent injury.
Recommendation:	It is recommended that the footway adjacent to the A654 Thorpe Lane should be increased in width between the development site and A650 Bradford Road to accommodate the envisaged increase in pedestrian flows along this corridor as a result of the proposed development.
Designer Response:	Recommendation accepted. The applicant proposes to widen the existing footway at this location to 2.0m and improve the crossing facilities at the junctions with Dunningley Lane and Thorpe Lane. There is sufficient width within the adopted highway, either within the existing verge of adjacent to the back of the footway to widen the footway accordingly, and retain a grassed verge of 0.5m between the footway and the carriageway.

Problem 3.18

Location:	A654 Thorpe Lane
Summary:	Lack of facilities for cyclists
Description:	The route along Thorpe Lane between the proposed development and Bradford Road is likely to be used by an increased number of cyclists following the completion of the development, including by children accessing Blackgates Primary School and Woodkirk Academy. A small number of cyclists were observed to ride along the existing footway along the west side of Thorpe Lane, during the site visit. Traffic on Thorpe Lane was observed to travel at relatively high speed and an increase in the number of cyclists on this road will increase the risk of them coming into contact with motor vehicles and subsequent risk of injury.
Recommendation:	It is recommended that suitable cycle facilities are provided between the development site and Bradford Road, to accommodate the envisaged increase in cycle flows along this corridor as a result of the proposed development. Any off-road facilities should include consideration of the parapet height on the bridge over the M62 with regards to cycle traffic.

Designer Response:	Recommendation accepted. There is limited scope to accommodate an off-road cycle lane across the M62 bridge. As such, cycle provision would need to be accommodated through narrowing the carriageway to provide on-road cycle lanes, linking to the existing provision at the A650 Bradford Road / Thorpe Lane junction. No land outside the existing highway boundary would be required to accommodate cycle lanes on Thorpe Lane and it is therefore considered that this issue can be considered in further detail with LCC as highway authority through the detailed design of the Thorpe Lane access works and proposed off-site scheme at the A650 Bradford Road / Thorpe Lane junction.

Problem 3.19

Location:	Proposed new roundabout on the A645 Thorpe Lane
Summary:	Two lane approaches leading to one lane exits
Description:	Both A654 main road approaches to the new junction split into two lanes as they enter the roundabout. However, both exits on the main road have only one exit lane. If two vehicles approach the roundabout side by side and both drivers intend to travel straight ahead then there is the risk of sideswipe collisions as they both leave the roundabout together and try to occupy one lane with risk of injury to the vehicle occupants and any other road users, including pedestrians on the footway who are in the vicinity.
Recommendation:	It is recommended that either the northbound nearside lane should be indicated as left turn only and the offside southbound lane as right turn only, or conversely the main road approaches to the roundabout reduced to one lane only.
Designer Response:	Recommendation accepted. The intention is for the junction to accommodate single lane exits only. Road markings and signage to appropriately demarcate this can be addressed as part of the detailed design.

Problem 3.20

Location:	Farm exit onto roundabout
Summary:	Lack of awareness of exiting vehicles
Description:	There is a small 'exit only' leg onto the roundabout proposed from the existing farm on the south-eastern side. As this is likely to be used infrequently it is possible that regular users of the route on the main road could ignore its presence, particularly drivers approaching from the south who have to give way to the right. It is possible they will not be expecting any vehicles to emerge so that, when they do, there is a possibility of collisions with emerging vehicle from the exit (including large / slow moving farm vehicles) and possible injury to vehicle occupants.
Recommendation:	It is recommended that this farm exit should be removed from the proposed scheme and instead drivers use the entry/exit to the south west of the roundabout to access and exit the farm area to/from the south.
Designer Response:	Recommendation not accepted. It is the intention to retain access from the properties to the southeast of Thorpe Lane to the roundabout, so as to minimise the possible conflicts between turning movements at the junction to the south west of the roundabout. It is considered that the presence of the farm access could be indicated on directional signage on approaches to the roundabout to adequately warn drivers, and minimise the risk of collisions. The precise signage requirements will be considered as part of the detailed design process.

Problem 3.21

Location:	North east of A654 Roundabout
Summary:	Lack of access to farm from the north east
Description:	There is no access to the farm area for southwest bound drivers approaching the roundabout. If they wish to access the farm they have to pass through the roundabout and then slow down to turn left into the access immediately after the roundabout exit. This could result in shunts from following vehicles which will be accelerating as they leave the roundabout and consequent injuries to vehicle occupants.
Recommendation:	It is recommended that an 'in- only' access is provided north east of the roundabout to the farm area.
Designer Response:	Recommendation not accepted. As highlighted above, it is considered that proposed farm access arrangements can be adequately indicated on directional signage on approaches to the roundabout to minimise the risk of such collisions. The precise signage requirements can be considered as part of the detailed design process.

Problem 3.22

Location:	A654 Roundabout
Summary:	Lack of deflection through roundabout
Description:	Drivers travelling from the north east through the roundabout can take a virtual straight line through the junction because of the geometry and lack of deflection to the left. This may encourage high speeds through the roundabout and the possibility of loss of control, coming into contact with other vehicles and possible injury to vehicle occupants.
Recommendation:	It is recommended that further deflection to the left from the north east should be incorporated into the design of the roundabout.
Designer Response:	Recommendation noted. Discussions have taken place with LCC as highway authority regarding the layout of the junction. A signal-controlled arrangement was initially proposed; however, the outcome of these discussions resulted in the current roundabout scheme, which is considered by LCC to be the preferred option for a variety of reasons. Given the requirement to retain access to properties located to the south of the junction, the roundabout cannot be located further to the south to improve deflection from the north-eastern approach. However, it would be feasible to adjust the approach and accommodate measures to encourage deflection (such as subsidiary deflection islands and appropriate road markings on the circulatory carriageway) within the

adopted highway boundary. As such these measures will be investigated as part of the detailed design process.

Problem 3.23

Location:	A650 / Smithy Lane junction
Summary:	Complex pedestrian crossing facility
Description:	The pedestrian facility at the junction of Smithy Lane with the A650 Bradford Road appears to require pedestrians having to cross in three stages and if traffic flow is heavy this could mean having to wait some time to cross the road. Pedestrians may instead cross on a more direct desire line using the wide central reserve where there are no controlled facilities, but where the crossing can be achieved while traffic is stationary at the signals. However, this will expose them to moving traffic if they cross when the signals change to green and could result in contact and injury to them.
Recommendation:	It is recommended that a more direct crossing facility is provided across the A650 between Smithy Lane and A654 Thorpe Lane.
Designer Response:	Recommendation not accepted. The scheme proposed is based on a scheme previously developed by LCC as part of other development proposals in the vicinity, and is considered to represent a significant improvement on the existing situation, given the following: • Pedestrians are required to cross a total of four lanes of traffic, comprising various turning manoeuvres. • The existing crossing operates only when demanded, and given the time required to serve the green man and clearance phases, has a significant impact on the operation of the junction. • In turn, pedestrians are generally required to wait a relatively long time for crossing to run when demanded. Alternative crossing arrangements similar to those suggested were considered initially; however, such a scheme was discounted given that it would require either a new controlled crossing of the eastbound carriageway in close proximity to the junction with Thorpe Lane, or a new crossing incorporated at the Thorpe Lane junction, which require land outside the control of the applicant to the north west of the junction (and is therefore not considered to be deliverable). The proposed arrangements therefore represent the optimum deliverable solution to significantly improve the operational efficiency of the junction, both for pedestrians and general traffic.

Problem 3.24

Location:	Smithy Lane / A650 junction
Summary:	Small pedestrian refuge
Description:	The triangular pedestrian refuge at the junction of Smithy Lane with the A650 Bradford Road is very small considering it is proposed to have three pedestrian crossing points connected to it. Large groups of pedestrians, especially groups of school children, could form on this refuge and some may spill over onto the carriageway with the possibility of being struck by moving vehicles and consequent injury. Also, it was noted that the east- west crossing point on drawing 3103SK007 01 shows the crossing as having red tactiles (i.e. a formal crossing) but the associated text reads "pedestrian crossing facilities to be retained" – the existing facilities on this leg are uncontrolled.
Recommendation:	It is recommended that if it the island is to be retained as part of the crossing facility, it should be enlarged to accommodate the peak number of pedestrians likely to use it. If not currently proposed, the eastern-most leg should be signal controlled as part of the scheme.
Designer Response:	Recommendation accepted. The size of the island has been maximised in accordance with the swept path analysis undertaken. The revised arrangement is demonstrated on Fore Consulting drawing 3103/SK007/001A. It is proposed that the existing uncontrolled crossing is retained. The note on the drawing has been amended accordingly, and the precise details in terms of tactile paving and kerbs will be addressed as part of the detailed design process.

4 Issues Identified Subsequent to the Audit

Problem 3.25

Location:	Pedestrian crossing at Junction 28 roundabout circulating carriageway
Summary:	Insufficient time to cross the circulating carriageway.
Description:	The proposed widening of the circulating carriageway in the vicinity of the A650 Bradford Road approach to 5 lanes would require the pedestrian crossing on the circulatory to be extended in length, with associated increases in green man and clearance times.
Recommendation:	Confirm that the additional time required to serve the crossing can be accommodated.
Designer Response:	Recommendation accepted. The widening of carriageway at this location forms part of the Highways England CRF scheme. It has been as agreed with Highways England that the CRF scheme is not required to accommodate the proposed development, and no reliance is placed on it. As such, the changes to the pedestrian crossing at this location and any associated road safety impacts implications are considered to be outside the scope of this RSA. However, based on the modelling undertaken as part of the Transport Assessment, the green man time and associated intergreen the crossing can each be extended by 5 seconds to reflect the time required to cross and clear an additional lane without significant impacts on the operation of the traffic signals and vehicular capacity beyond those modelled previously. This is demonstrated in updated TRANSYT models, provided to LCC and Highways England under separate cover. Notwithstanding that the modelling additional crossing and clearance time can be accommodated, the CRF scheme is outside the scope of this RSA, and therefore the precise signal timings to be operated in practice are to be addressed as part of the detailed design and implementation of the CRF scheme.

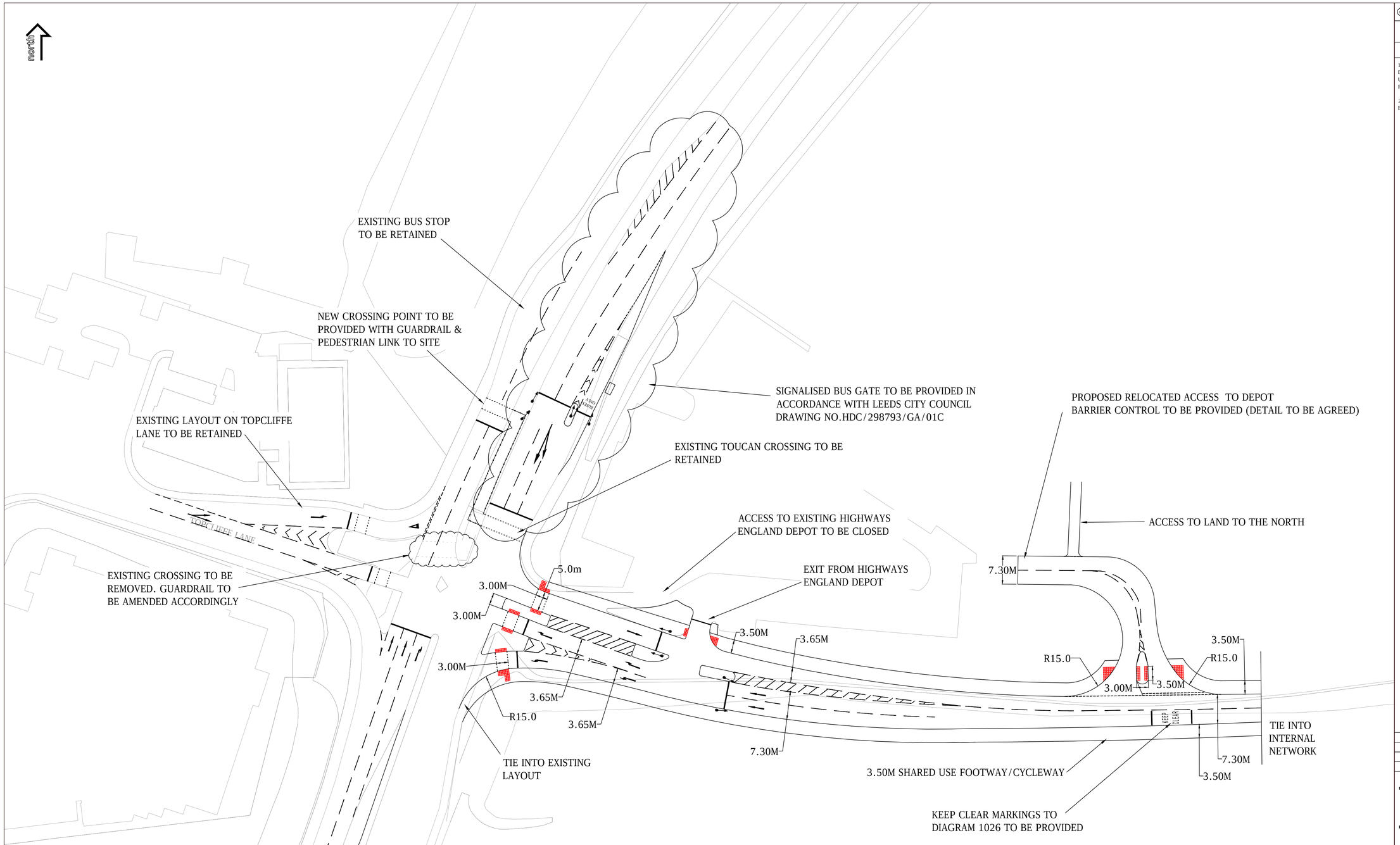
Drawings

DO NOT SCALE

N O T E S

1. PRELIMINARY LAYOUT SUBJECT TO FULL TOPOGRAPHICAL SURVEY & DETAILED DESIGN INCLUDING CDM COMPLIANCE, STATUTORY UNDERTAKERS SEARCH, DIVERSION REQUIREMENTS, HIGHWAY DRAINAGE PROVISION, LAND AVAILABILITY AND LOCAL AUTHORITY APPROVAL.

2. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL ARCHITECTS, ENGINEERS & SPECIALISTS DRAWINGS AND SPECIFICATIONS.



REV	DESCRIPTION	DATE	BY
C	CHANGES FOLLOWING RSA	12/17	PJ
B	CHANGES TO CROSSING FACILITIES	10/17	PJ
A	UPDATED TO REFLECT CAPACITY MODEL	09/17	PJ

CLIENT:

SIR ROBERT OGDEN PARTNERSHIP

PROJECT

TINGLEY STATION

DRAWING TITLE

PROPOSED SITE ACCESS ARRANGEMENTS FROM A653 DEWSBURY ROAD

PRELIMINARY

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PJ	AS	2017	1:500	A1

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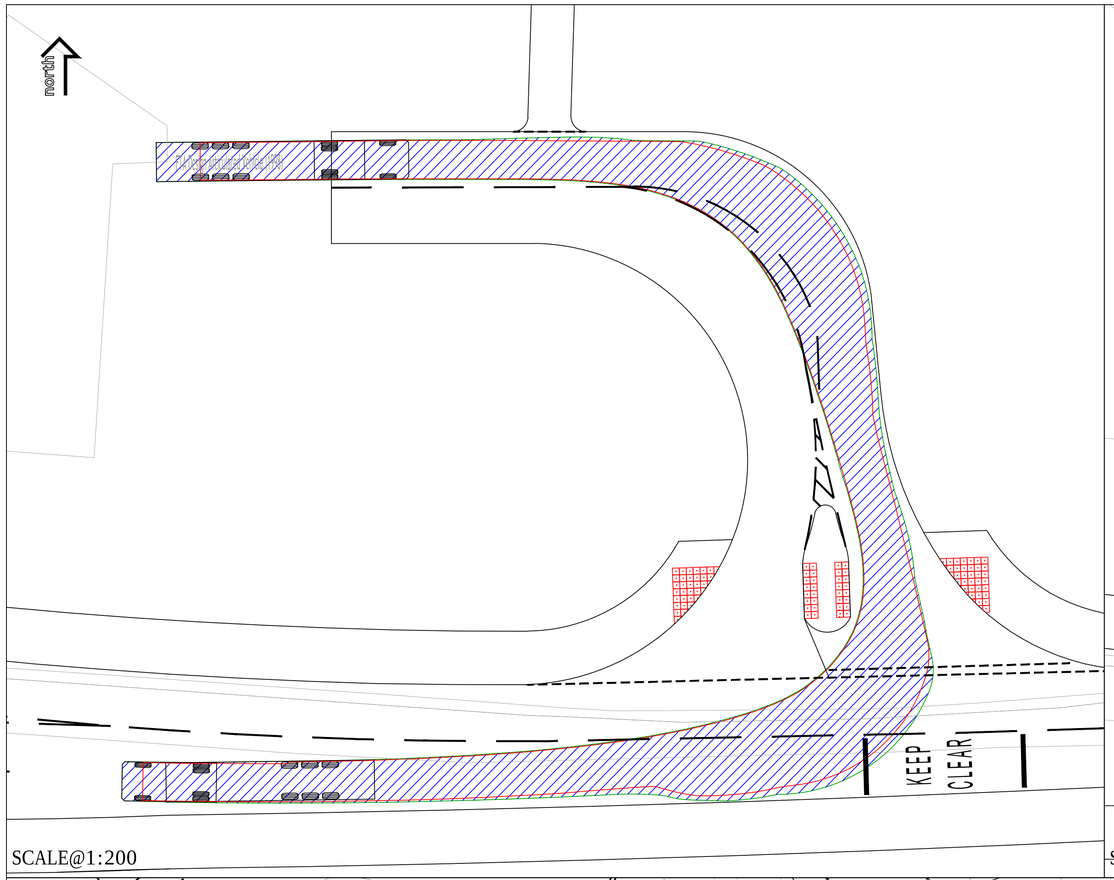

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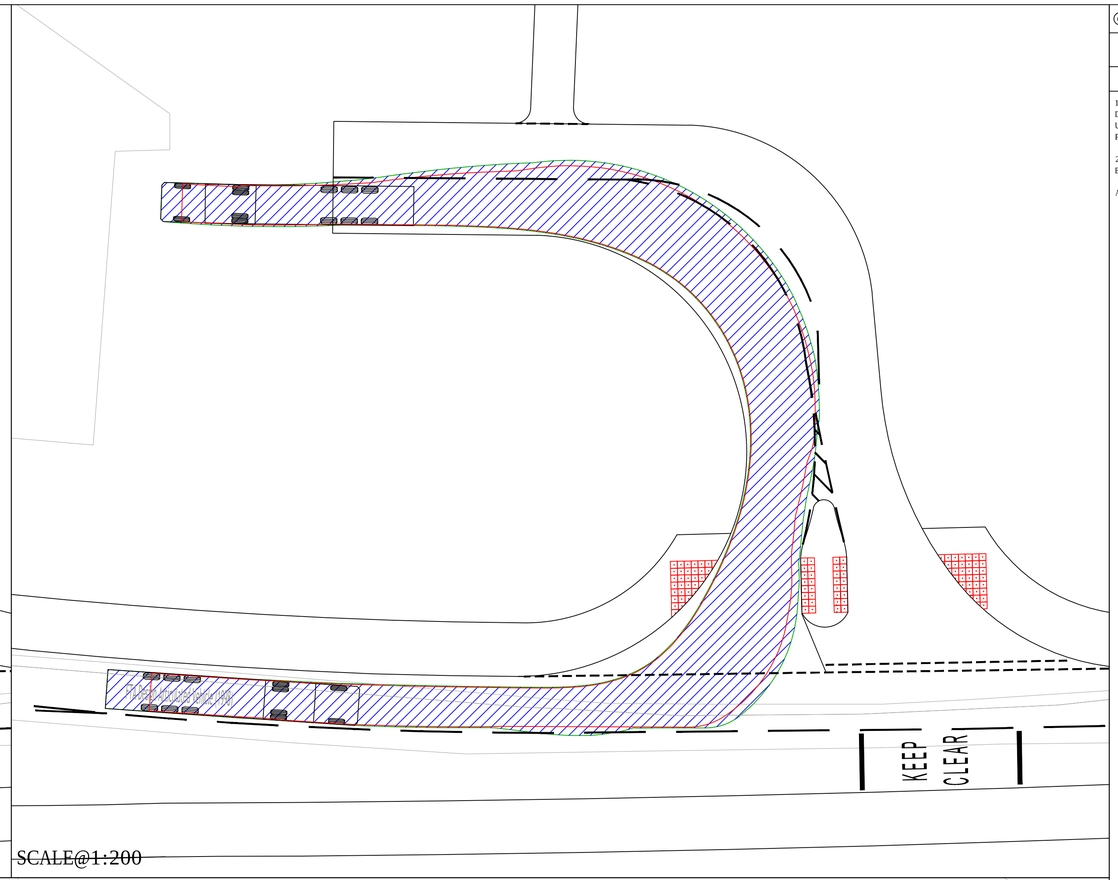

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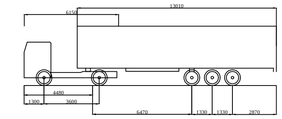

FTA DESIGN ARTICULATED VEHICLE (1998)

OVERALL LENGTH	16.480M
OVERALL WIDTH	2.550M
OVERALL BODY HEIGHT	3.870M
MIN BODY GROUND CLEARANCE	0.515M
MAX TRACK WIDTH	2.470M
LOCK TO LOCK TIME	3.00S
KERB TO KERB TURNING RADIUS	6.550M

REV	DESCRIPTION	DATE	BY
C	CHANGES FOLLOWING RSA	12/17	PJ
B	LATEST LAYOUT INCORPORATED	10/17	PJ
A	LATEST LAYOUT INCORPORATED	10/17	VP

CLIENT:

SIR ROBERT OGDEN PARTNERSHIP

PROJECT

TINGLEY STATION

DRAWING TITLE

PROPOSED SITE ACCESS ARRANGEMENTS FROM A653 DEWSBURY ROAD
SWEPT PATH ANALYSIS

PRELIMINARY

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VP	AS	30.06.2017	1:250	A1

Job Number	Drawing Number	Revision
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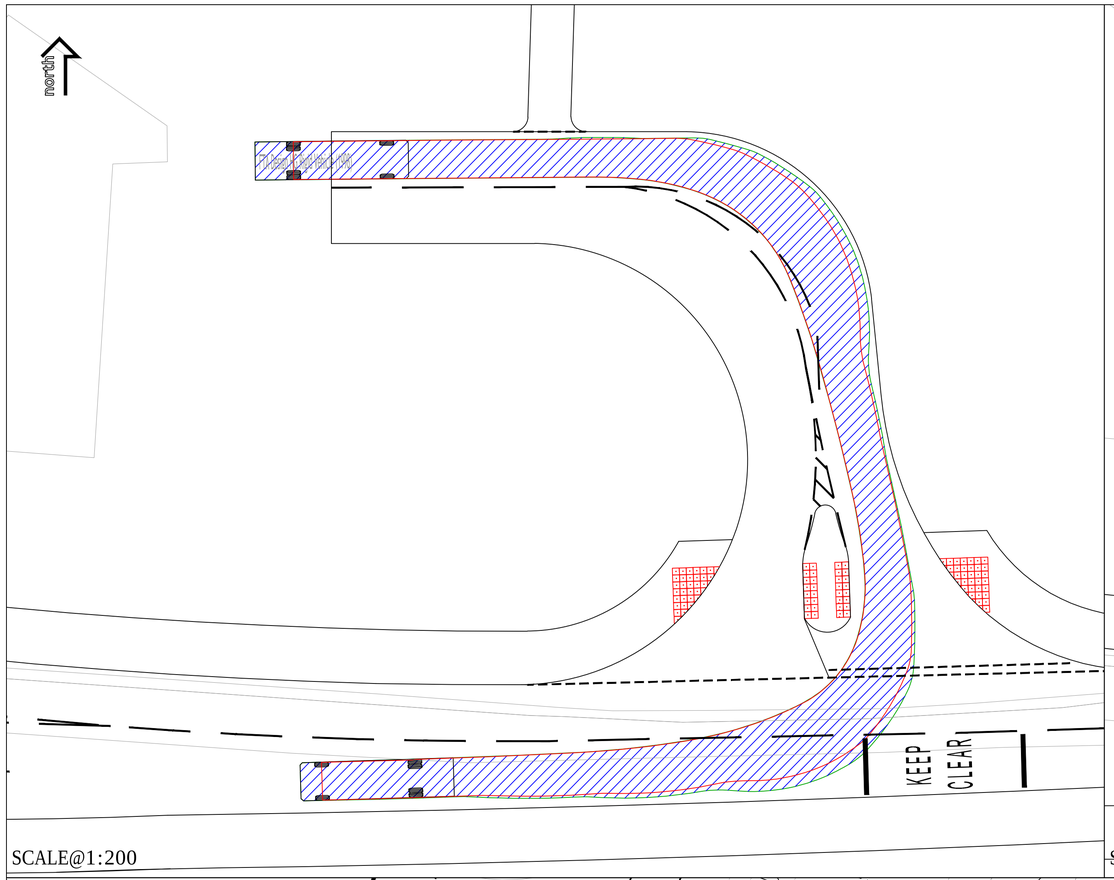

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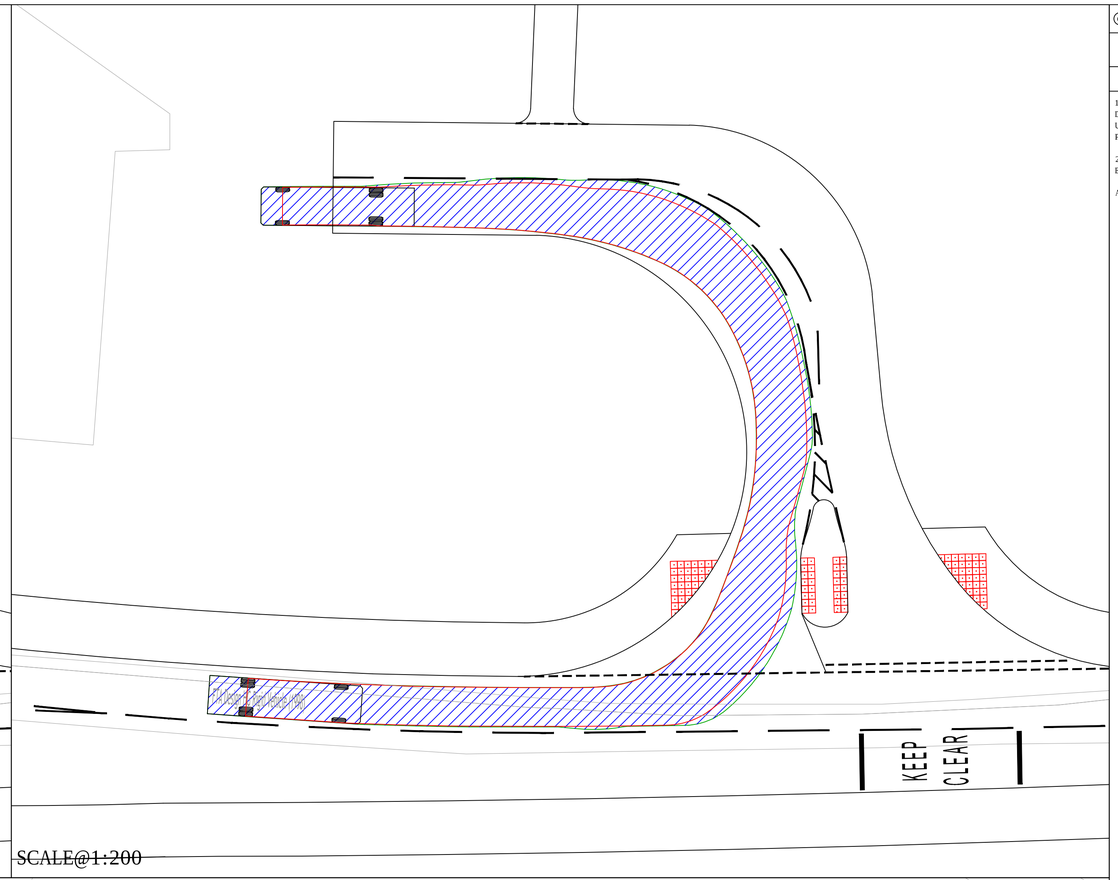

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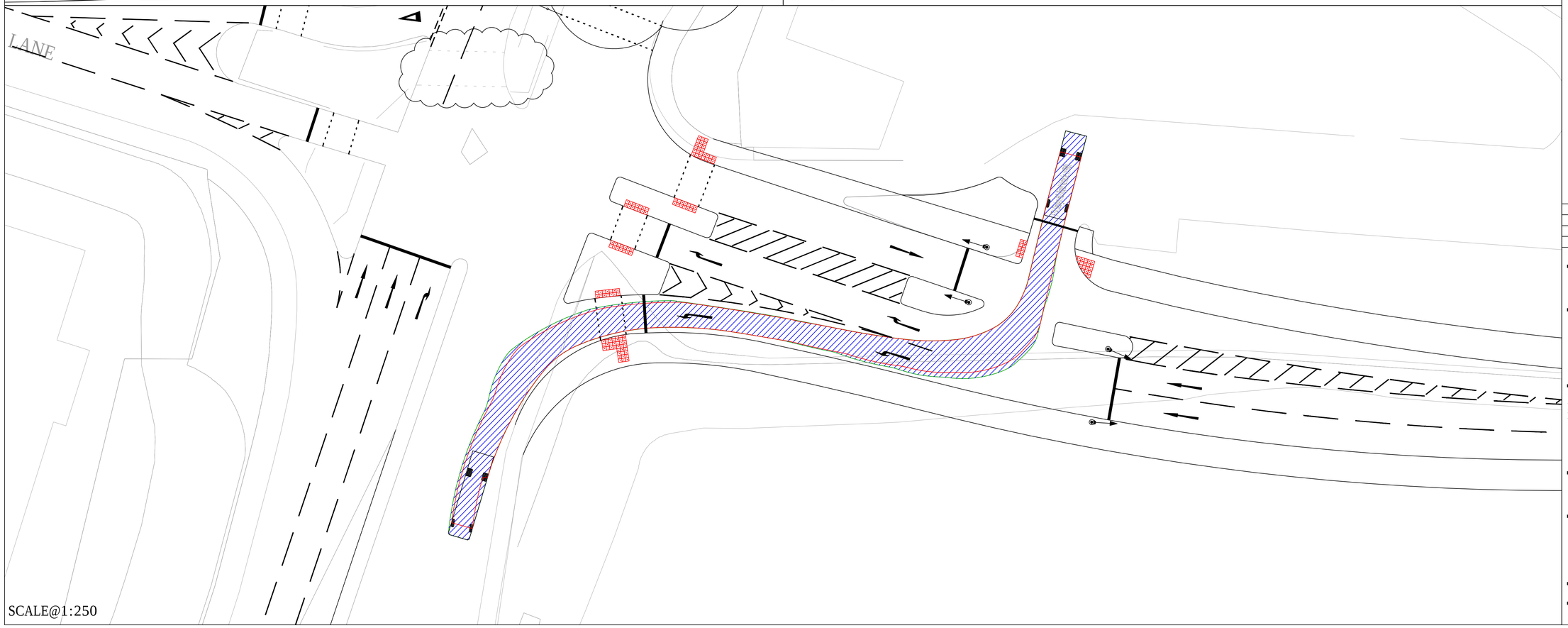

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N O T E S

1. PRELIMINARY LAYOUT SUBJECT TO FULL TOPOGRAPHICAL SURVEY & DETAILED DESIGN INCLUDING CDM COMPLIANCE, STATUTORY UNDERTAKERS SEARCH, DIVERSION REQUIREMENTS, HIGHWAY DRAINAGE PROVISION, LAND AVAILABILITY AND LOCAL AUTHORITY APPROVAL.

2. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL ARCHITECTS, ENGINEERS & SPECIALISTS DRAWINGS AND SPECIFICATIONS.

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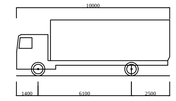

FTA DESIGN HG RIGID VEHICLE (1998)

OVERALL LENGTH	10.000M
OVERALL WIDTH	2.500M
OVERALL BODY HEIGHT	3.645M
MIN BODY GROUND CLEARANCE	0.440M
TRACK WIDTH	2.470M
LOCK TO LOCK TIME	3.00S
KERB TO KERB TURNING RADIUS	11.000M

REV	DESCRIPTION	DATE	BY
C	CHANGES FOLLOWING RSA	12/17	PJ
B	LATEST LAYOUT INCORPORATED	10/17	PJ
A	LATEST LAYOUT INCORPORATED	10/17	VP

CLIENT:

SIR ROBERT OGDEN PARTNERSHIP

PROJECT

TINGLEY STATION

DRAWING TITLE

PROPOSED SITE ACCESS ARRANGEMENTS FROM A653 DEWSBURY ROAD
SWEPT PATH ANALYSIS

PRELIMINARY

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VP	AS	30.06.2017	1:250	A1

Job Number	Drawing Number	Revision
3103	3103 SK001 026	C

DO NOT SCALE

NOTES

1. PRELIMINARY LAYOUT SUBJECT TO FULL TOPOGRAPHICAL SURVEY & DETAILED DESIGN INCLUDING CDM COMPLIANCE, STATUTORY UNDERTAKERS SEARCH, DIVERSION REQUIREMENTS, HIGHWAY DRAINAGE PROVISION, LAND AVAILABILITY AND LOCAL AUTHORITY APPROVAL.

2. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL ARCHITECTS, ENGINEERS & SPECIALISTS DRAWINGS AND SPECIFICATIONS.

KEY:

EXISTING FOOTWAY TO BE REMOVED AND DETERRENT INSTALLED

NEW 3.0M CYCLE & PEDESTRIAN ROUTE TO BE PROVIDED WHERE ACHIEVABLE

NORTH

LANE ALLOCATIONS TO BE AMENDED TO ALLOW TWO LANES TOWARDS DEWSBURY

INSET A

GUARD-RAILING TO BE PROVIDED ALONG CARRIAGEWAY (PRECISE REQUIREMENTS TO BE CONFIRMED AS PART OF DETAILED DESIGN)

REQUIREMENTS FOR RELOCATED LIGHTING TO BE CONFIRMED AS PART OF DETAILED DESIGN

LANE ALLOCATIONS TO BE AMENDED TO ALLOW TWO LANES TOWARDS LEEDS

EXISTING OVERRUN STRIP (APPROX 1.5m) TO BE BROKEN OUT AND NEW SHARED CYCLE/FOOTWAY TO BE PROVIDED. SEE INSET C FOR TYPICAL CROSS SECTION. RAMP & GRADIENT DETAILS TO BE CONFIRMED AT DETAILED DESIGN STAGE

EXISTING PEDESTRIAN CROSSING TO BE REMOVED

EXISTING LAYOUT TO BE RETAINED

INSET B

GUARD-RAILING TO BE PROVIDED ALONG CARRIAGEWAY (PRECISE REQUIREMENTS TO BE CONFIRMED AS PART OF DETAILED DESIGN)

REQUIREMENTS FOR RELOCATED LIGHTING TO BE CONFIRMED AS PART OF DETAILED DESIGN

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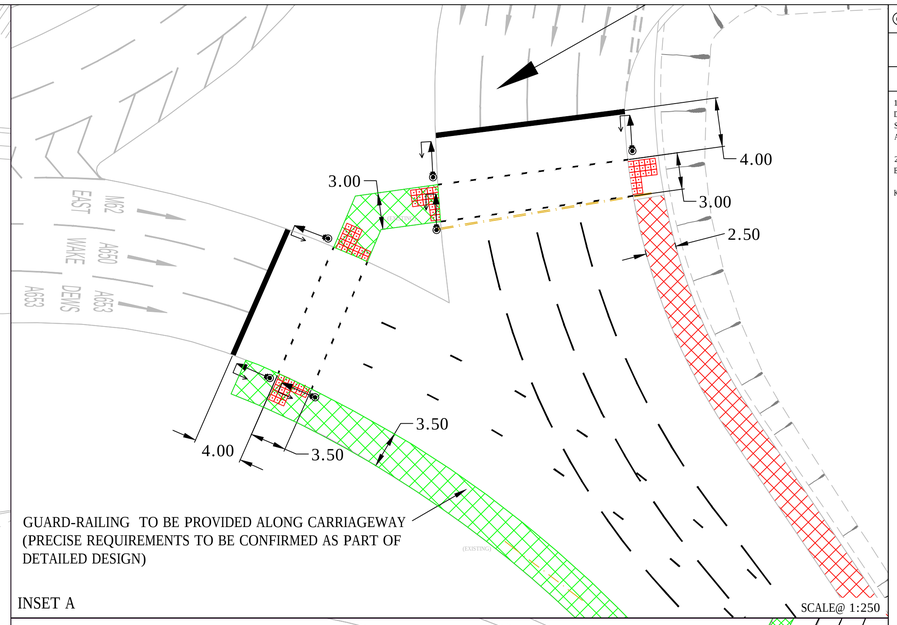
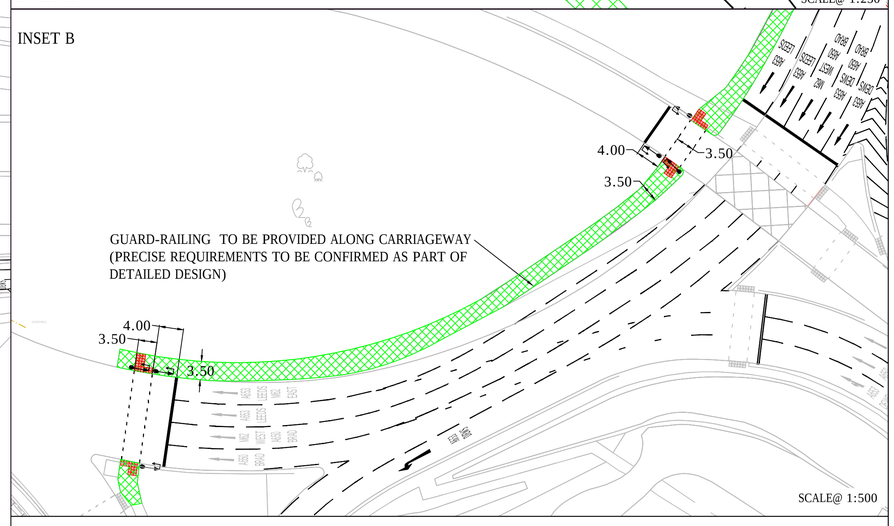


GUARD-RAILING TO BE PROVIDED ALONG CARRIAGEWAY (PRECISE REQUIREMENTS TO BE CONFIRMED AS PART OF DETAILED DESIGN)

INSET A

SCALE@ 1:250

INSET B



GUARD-RAILING TO BE PROVIDED ALONG CARRIAGEWAY (PRECISE REQUIREMENTS TO BE CONFIRMED AS PART OF DETAILED DESIGN)

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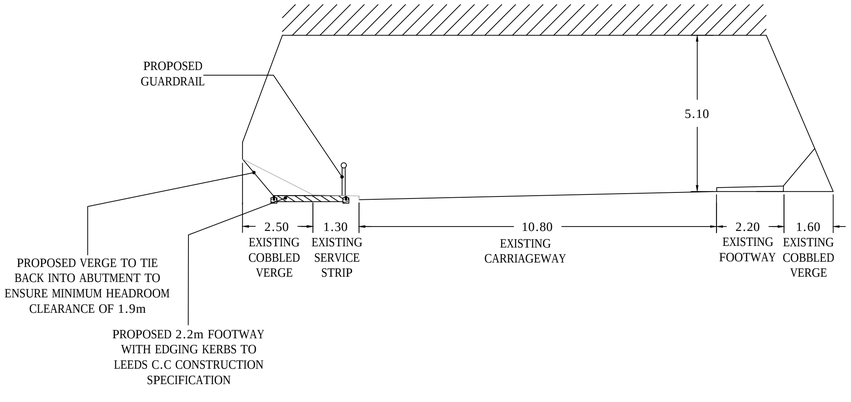

INSET C - DIMENSIONS INDICATIVE

SCALE@ 1:100

REV	DESCRIPTION	DATE	BY
B	UPDATES FOLLOWING RSA	11/17	PJ
A	LANE ALLOCATIONS UPDATED	10/17	PJ

CLIENT:

SIR ROBERT OGDEN PARTNERSHIP

PROJECT

TINGLEY STATION PAS SITE

DRAWING TITLE

POSSIBLE CHANGES TO M62 JUNCTION 28 INCLUDING PEDESTRIAN / CYCLE ROUTE

PRELIMINARY

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Drawn by	Checked by	Date	Scale	Format
VP	AS	04.12.2017	AS SHOWN	A1

Job Number	Drawing Number	Revision
3103	3103 SK003 004	B

DO NOT SCALE

N O T E S

1. PRELIMINARY LAYOUT SUBJECT TO FULL TOPOGRAPHICAL SURVEY & DETAILED DESIGN INCLUDING CDM COMPLIANCE, STATUTORY UNDERTAKERS SEARCH, DIVERSION REQUIREMENTS, HIGHWAY DRAINAGE PROVISION, LAND AVAILABILITY AND LOCAL AUTHORITY APPROVAL.

2. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL ARCHITECTS, ENGINEERS & SPECIALISTS DRAWINGS AND SPECIFICATIONS.

north

TIE INTO EXISTING KERBLINE

EXISTING BUS STOP TO BE RE-LOCATED. EXACT POSITION TO BE CONFIRMED

ACCESS TO BLACKGATES PRIMARY SCHOOL TO BE RETAINED

ACCESS TO SPINK WELL LANE TO BE MODIFIED & RETAINED

EXISTING FOOTWAY TO BE RETAINED & MODIFIED WHERE REQUIRED.

BRADFORD ROAD TO BE MODIFIED TO PROVIDE EXTRA EASTBOUND LANE

NEW PEDESTRIAN CROSSING FACILITIES TO BE INSTALLED WITH TACTILE PAVING & DROPPED KERBS

UNCONTROLLED CROSSING FACILITIES TO BE RETAINED WITH TACTILE PAVING & DROPPED KERBS

EXISTING REFUGE ISLAND TO BE ENHANCED

NEW KERBED CENTRAL RESERVE TO BE CONSTRUCTED

ADVANCED CYCLE STOP LANES TO BE PROVIDED

PEDESTRIAN CROSSING FACILITIES TO BE RETAINED WITH TACTILE PAVING & DROPPED KERBS

NEW TRAFFIC ISLANDS TO BE PROVIDED

TIE INTO EXISTING KERBLINE

EXTENT OF WORKS

EXTENT OF WORKS

EXTENT OF WORKS

3.50M
3.50M
3.50M
3.50
3.50
3.50
3.50
3.50
3.50

INSET A

LEIGH VIEW

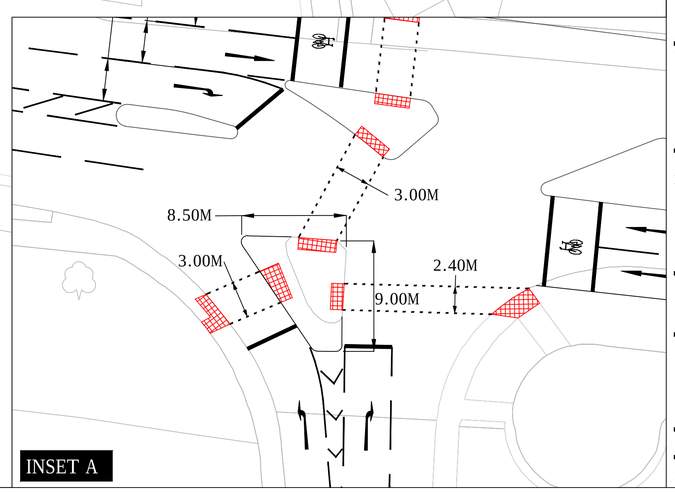
145.1m

144.8m

LEIGH VIEW

SMITHY LANE

1
2
3



INSET A

REV	DESCRIPTION	DATE	BY
A	UPDATES FOLLOWING RSA	11/17	PJ

CLIENT:
SIR ROBERT OGDEN PARTNERSHIP

PROJECT
TINGLEY PAS SITE

DRAWING TITLE
BRADFORD ROAD/THORPE LANE/SMITHY LANE JUNCTION IMPROVEMENTS

PRELIMINARY

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3103	3103 SK007 01	A

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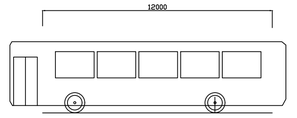
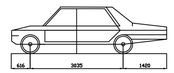


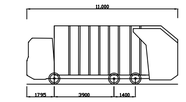
STANDARD RIGID BUS

OVERALL LENGTH	12.000m
OVERALL WIDTH	2.550m
OVERALL BODY HEIGHT	3.069m
MIN BODY GROUND CLEARANCE	0.309m
TRACK WIDTH	2.550m
LOCK TO LOCK TIME	4.00S
KERB TO KERB TURNING RADIUS	10.771m



LARGE CAR (2006)

OVERALL LENGTH	4.80m
OVERALL WIDTH	1.80m
OVERALL BODY HEIGHT	1.525m
MIN BODY GROUND CLEARANCE	0.310m
MAX TRACK WIDTH	1.831m
LOCK TO LOCK TIME	4.00S
KERB TO KERB TURNING RADIUS	5.900m



PHEONIX REFUSE VEHICLE (3 AXLE)

OVERALL LENGTH	11.0M
OVERALL WIDTH	2.450M
OVERALL BODY HEIGHT	3.814M
MIN BODY GROUND CLEARANCE	0.366M
TRACK WIDTH	2.450
LOCK TO LOCK TIME	4.00S
KERB TO KERB TURNING RADIUS	9.500M

REV	DESCRIPTION	DATE	BY

CLIENT:

SIR ROBERT OGDEN PARTNERSHIP

PROJECT

TINGLEY PAS SITE

DRAWING TITLE

BRADFORD ROAD/THORPE LANE/SMITHY LANE JUNCTION

AUTOTRACK ANALYSIS

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