MATTER 15: INFRASTRUCTURE (WCS7, WCS13)

Main Issue – Whether the infrastructure requirements for the Core Strategy are soundly based and deliverable?

Summary of Response – The evidence base does not contain clear information regarding the delivery of infrastructure. The Core Strategy does not provide a suitable platform for promoting sustainable modes of transport as it is based on an incorrect settlement hierarchy and an incorrect distribution of development. It is submitted that the Core Strategy is not based on robust evidence and did not consider reasonable alternatives. It is, therefore, 'unsound', as defined by Planning Policy Statement 12.

A) Have the critical infrastructure requirements in the Infrastructure Delivery Plan been justified by the evidence base? What would be the consequences for the strategy if any of the critical infrastructure was not delivered? Is there sufficient commitment at this stage from the relevant organisations responsible for delivery?

AND

B) Is it clear what infrastructure is required for the first 5 years of the plan and who is going to fund and provide it?

1.1 No. One of the key issues throughout Pelham Holding's submissions is that the CS is based on a lower level of housing provision than is required to meet the need within the District and an inappropriate spatial strategy. As the evidence base has failed to test the appropriate level and distribution of development, the IDP is inherently flawed as the critical infrastructure requirements may be different to those as outlined in the IDP.

1.2 The IDP does not review the ability of alternative spatial distributions and sites to deliver potentially more sustainable forms of development or the resultant infrastructure requirements of such scenarios. As outlined below, in Matter 15D, the proposed spatial distribution in Polegate will not support sustainable forms of transport or reduce travel demand.

1.3 Notwithstanding this, it is considered that the critical infrastructure requirements identified in the Infrastructure Delivery Plan (IDP), as being required to meet the strategy put forward in the CS, are themselves not clearly justified by the evidence base. It is unclear in a number of instances as to who will provide the infrastructure required and when it will be provided. It is also unclear whether it would be reasonable to require elements of the critical infrastructure to be delivered by developers bringing development forward based on the proposed spatial strategy within the CS.

1.4 As an example, critical transport infrastructure requirements are identified for the Strategic Road Network for Polegate in Table 4 and Appendix A of the IDP, and those at Cophall roundabout specifically are identified as being high risk owing to development being dependent on them post 2016. It is not evident that development proposed at Stone Cross, the phased programming of which in the CS is identified to commence in 2015/16, will be able to deliver these infrastructure requirements in the absence of delivery of the SD4 site in Polegate, the phasing of which in the CS is not due to commence until

2019/2020. Neither is it evident that it would be reasonable of development in this location to require it to. The same is true in reverse if the SD4 site were to come forward in advance of development at Stone Cross.

1.5 With regards primary education provision, the requirement for 1FE (210) school places are noted as being required from 2013/14 onwards. As noted, the CS does not propose further development in Polegate (SD4) until 2019/2020.

1.6 Given that the delivery of many aspects of the IDP in Appendix A of the document including community bus services; secondary provision; primary provision; and early year provision are also noted as **not** being subject to any contingencies, and that this may therefore place an over-reliance on developer contributions, it is unclear how provision will be met in the absence of developers. The evidence base does not provide a clear assessment of the methods of funding and delivery.

1.7 It was evident from the exploratory meeting that there is insufficient evidence of the deliverability of the necessary infrastructure. In response to the Inspector's concerns, the council cited a section 106 agreement and unilateral undertakings presented by Pelham Holdings, in relation to appeal ref APP/C1435/A/10/2130580, to demonstrate that the required infrastructure is deliverable[1]. This evidence, however, merely demonstrates that the proposed development on the PW1 site was able to deliver those particular infrastructure requirements in that specific instance and does not demonstrate, that infrastructure could be delivered or justified in alternative development scenarios.

1.8 This point is particularly important when considering the potential for the proposed distribution of development within the Polegate/Willingdon and Stone Cross. It is not clear that the proposed sites in the Core Strategy can meet the same conditions, which ensured that the proposals in the case of PW1 were acceptable. It is not evident that the distribution of development proposed at Stone Cross, in particular, would be able to achieve these same conditions because the development is more remote from the facilities within Polegate, including the train station, and is not as well served by buses and is not as near the proposed quality bus corridor.

1.9 It has been clearly demonstrated however that development at the PW1 site could deliver the significant infrastructure improvements required, including Primary and Secondary education provision and the necessary highway junction improvements. These could potentially be delivered early in the plan period as a result of development of the PW1 site.

1.10 One of the reasons the PW1 was ruled out of the SHLAA was owing to the requirement for the delivery of the Folkington Link.

1.11 The IDP does make reference to the Folkington Link in Appendix A under transport infrastructure requirements. It notes the scheme is desirable within the plan period but notes that the alternative option would allow delivery of development in South Wealden, albeit with residual transport issues. It goes on to note that the risks relate to the ability to gain funding and relevant approvals to deliver the scheme which would provide substantial

[1] Paragraph 10.3 of Response to the Summary of the Inspector's Concerns and letter dated 7th September 2011

transport benefits. However, it further notes that as the scheme is not critical to growth in South Wealden, the risk is low.

1.12 As the non delivery of this scheme is presented in the evidence as being one of the constraining factors for delivering additional development specifically within the Sussex Coast Sub Region, and is further evidenced as a reason for preventing an otherwise highly sustainable development option coming forward (site PW1), the classifying of the scheme as being not critical to growth in South Wealden would not appear to be supported by the evidence. This is notwithstanding the fact that the PW1 site is not dependent upon the Folkington Link.

1.13 The consequences of failure to deliver critical infrastructure requirements could result in either the failure of the strategy to meet the needs of the District; or an unsustainable form of development. As there are no contingencies identified for the delivery of many aspects of the infrastructure highlighted by the IDP, the risks of the strategy are high. The inflexible and constrained approach of the CS, including in considering alternative or additional provision for development has the potential to make the issue of infrastructure delivery more acute.

D) Does the Core Strategy provide an adequate basis for the achievement of more sustainable forms of transport and travel?

1.14 No. Two of the key considerations in promoting sustainable forms of travel are:

- the creation of a critical mass to support public transport;
- ensuring that development is located next to or near to facilities, which will encourage travel by bicycle or foot.

1.15 The proposed spatial distribution does not adequately address either of these.

1.16 The assessment of infrastructure constraints fails to consider alternatives to the overall quantum of development, as well as alternative spatial distribution of development. Neither is there a comparative assessment to demonstrate the resultant distribution will result in a more sustainable form of development and meet policy aspirations specifically in terms of SEP Policy T1 ii, iii, iv, vii (c and d) in terms of:

- achieving a rebalancing of the transport system in favour of sustainable modes;
- fostering an improved and integrated network of public transport services;
- reducing average journey lengths;
- prioritising investment to facilitate urban renewal and renaissance to achieve a more sustainable pattern of development and improving overall levels of accessibility.

1.17 A clear example of this is the distribution of housing in Polegate/Willingdon and Stone Cross. The majority of housing development land is proposed adjacent to Stone Cross. As outlined in relation to Matter 2, Stone Cross and Polegate are incorrectly categorised within the settlement hierarchy. Stone Cross is a village, with fewer facilities and less access to public transport than Polegate. Polegate should be categorised as a district centre as it has all of the required facilities, a good bus service and a train station.

1.18 The proposed spatial distribution directs housing towards a less well serviced settlement and reduces the capacity of Polegate to develop in a sustainable manner and to capitalise on the various assets of the town.

1.19 With regards to the ability to provide for additional development in Polegate, the CS fails to consider the otherwise appropriate and highly sustainable location of the PW1 site in the absence of very specific highway constraints.

1.20 Alternative access arrangements for the PW1 site have not been considered or assessed through the CS or its evidence base. Neither has the effect of this as an alternative distribution of development on the highway network. The CS does not take account of the strategy and objectives of the SEP, including the provision of sustainable urban extensions to existing towns and the overwhelming level of housing need specifically within the Sussex Coast sub region.

1.21 It is evident that the effect of inclusion of the PW1 site merited more detailed assessment by the Council than the CS and the evidence base provides for, owing to its ability to provide for a highly sustainable form of development.

1.22 Such assessment should have considered the effects of provision of site access and at grade crossings to the A27 within the SWETS report, in order to determine whether the perceived issues and constraints of the site remained, or whether an identifiable quantum of development could be successfully achieved on the site. Further consideration should have also been given to:

- the delivery of alternative infrastructure provision or improvements in the absence of the Folkington Link;
- the effect of these on the highway network, including the improvements identified as being required to the highway network through SWETS and the IDP;
- the effect of the delivery of alternative sustainable transport modes, including the quality bus corridor.

1.23 A final assessment should also have been made to determine whether the overall benefits of the site, and the meeting of identified policy requirements, outweighed any residual highway impacts. This assessment should also have considered whether the inconveniencing of road users should outweigh the provision of otherwise highly sustainable housing and services.

1.24 In the absence of appropriate assessment being undertaken by the Council in relation to these specific highway considerations, Pelham Holdings has subsequently commissioned a further assessment of the acceptability of providing alternative access arrangements to the PW1 site from the A27, incorporating improved provision for pedestrian and cycle access to and from the site (Appendix 1 of this Matter). The assessment takes account of SWETS and the proposed junction improvements and concludes that appropriate access to the site can be gained and actually improves the flow of traffic on the strategic road network.

1.25 It is submitted that the failure to consider this site as a viable development site and the early elimination of this site by the SHLAA undermines the ability of the Core Strategy to promote sustainable modes of transport.

1.26 In summary, the promotion of sustainable transport requires compact towns with access to facilities and public transport. The proposed development of Stone Cross and the failure to consider the development of Polegate undermines this goal.

APPENDICES – TABLE OF CONTENTS

Appendix 1: Peter Brett Associates – Access Deliverability

APPENDIX 1: PETER BRETT ASSOCIATES – ACCESS DELIVERABILITY

TECHNICAL NOTES

Job Name:	Honey Farm (PW1), Polegate
Job No.:	25967-001
Note No.:	001 (v006)
Date:	15/12/11
Subject:	Access Deliverability
Prepared By:	Gary Heard

Peter Brett Associates LLP
Calgarth House
39-41 Bank Street
Ashford TN23 1DQ

T: +44 (0)123 365 1740
F: +44 (0)123 365 1741
E: ashford@peterbrett.com
Website: www.peterbrett.com

Introduction

1.1 The following note summarises the technical work that has been completed to demonstrate the deliverability of access to development at the Honey Farm site in Polegate (referred to as the PW1 site in this note). The figure below illustrates the general location of the proposed site.



1.2 The basis of assessment contained within this note is a residential development of 250 units. Reference has been made to a previous planning application submitted for a larger residential development at PW1, and the assessment parameters agreed with Highway Officers where relevant. The basis of assessment has also been informed by a recent meeting between PBA and the Highways Agency (HA) and discussions with East Sussex County Council (ESCC).

1.3 The site size being promoted would be suitable for a residential development of 250 units. This is a significant departure in site size from the planning application previously submitted for 520 units (ref planning application 2008/2180). Whilst a vehicular access strategy was

agreed with Officers for planning application 2008/2180, those proposals would not be appropriate, both in terms of location and scale, to serve a development of around 250 units now being promoted. Therefore, a revised access strategy has been developed to demonstrate access, and deliverability of this, to the site.

1.4 The key objectives of this technical note are twofold :

- To demonstrate the pedestrian and cycle connectivity that can be delivered between the site and Polegate town centre.
- To demonstrate that highway access and mitigation measures can be delivered to provide vehicular capacity without compromising the operation of the strategic highway network.

Liaison with Highways Agency

1.5 At a recent meeting between PBA and representatives of the HA (the A27 Route Performance Manager, the Case Officer and Technical Consultant) the following was advised by the HA.

- Although the starting position will always be a policy objection from the HA for direct development access onto the trunk road (the A27 in this case) a graduated approach would be taken by the HA in assessing a site access location.
- A further starting position for the HA would be that the developer would need to demonstrate a “nil detriment” solution in achieving an access. Therefore, the “with development” scenario should offer at least the same level of service to trunk road traffic as the “without development” scenario.
- A signal controlled access to the site would be preferred to a roundabout access by the HA – although this does not mean the principle of an access is agreed at this stage.
- The HA are content with the TR3 schemes in principle to deliver sufficient highway capacity to release housing development within Wealden.

1.6 From the meeting it is apparent that the HA is being consistent with elsewhere (ie A2 at Whitfield) that they will refer to their policy of no direct access from the Trunk Road Network in the first instance. However, if a site is allocated on the basis of an access junction onto the Trunk Road Network, and this is sustained through the EiP process, then the HA will accept the Core Strategy position. This has happened for proposed development at Whitfield, near Dover, where the now adopted Core Strategy allocates a housing site with direct access onto the A2 trunk road.

1.7 Planning application 2008/2180 also proposed direct access onto the trunk road network at Cophall roundabout for an initial phase of 400 houses and this principle was considered acceptable by the HA.

Proposed access strategy

1.8 The following is proposed as an access strategy :

- A signal controlled site access junction on the A27 corridor on the section that connects Cophall roundabout to the north and the A27 / A2270 signal controlled junction to the south.
- Mitigation of development traffic at the signal controlled junction to the south.
- Mitigation of development traffic at Cophall roundabout to the north.
- Walking and cycling connectivity across the A27 corridor via the site access junction and in accordance with current design guidance.

- Demonstration of at least nil detriment to strategic traffic journeys on this corridor.

1.9 The access strategy therefore seeks to provide connectivity of the site with Polegate town centre whilst maintaining an appropriate level of service for strategic highway journeys.

Modelling methodology

1.10 Whilst ESCC are currently preparing the South Wealden and Eastbourne Transport Strategy (SWETS) model, it is understood from liaison with Officers at ESCC that this tool is not likely to be available for use until the New Year. Once available it would be expected that the SWETS model would be the Local Authorities development control tool of choice to assess highway impact of development. However, until that time it has been necessary to adopt the methodology principles agreed for the 2008 planning application and 2011 planning appeal.

1.11 Information has therefore been drawn from planning application 2008/2180 and the planning appeal against refusal of this, heard earlier this year. The purpose of referring to the previous application is to review parameters that were agreed with Highway Officers at ESCC and the HA and which are still considered to be relevant and applicable.

Traffic generation rates

1.12 The Transport Assessment Report (TAR) submitted in support of application 2008/2180 defines the vehicular trip generation rates summarised in Table 1 (at the rear of this note). These trip generation rates were agreed with the Highway Authorities at the time of writing the TAR. The agreed Highways and Transport Statement of Common Ground (SoCG) lodged for the planning appeal recognises that these trip generation rates are "*on the high side of what might now be considered normal*".

1.13 In addition, and subsequent to planning application 2008/2180 being submitted, further analysis of trip generation rates was completed by the Transport Consultant through reference to trip rates adopted for other Non Statutory Wealden Local Plan (NSWLP) sites at Shepham Lane and Dittons Road. The Dittons Road application was tested at Public Inquiry and its trip generation rate of 0.58 two way trips per unit per peak hour was proposed as a revised trip generation rate for PW1, Polegate. This revised trip generation rate was accepted by the Highways Agency as suitable for a sensitivity test and potentially for adopting as an assessment trip generation rate.

1.14 The adoption of a Residential Travel Plan at this site would also contribute towards minimising traffic generation rates through promotion of a range of sustainable transport measures. It would be expected that any residential development proposal at this location would be accompanied by a Residential Travel Plan.

1.15 On this basis, the adoption of the Table 1 trip generation rates within this note is considered a particularly robust parameter assumption.

Traffic distribution

1.16 The TAR submitted in support of planning application 2008/2180 assumed sole access for an initial phase of 400 units via Cophall roundabout to the north. In this scenario all development vehicles must use the Cophall roundabout and of these a proportion were assumed to head to and from the south and thus also pass through the A27 / A2270 junction. Therefore some development vehicles were assumed to pass through both junctions.

1.17 An access from a new junction on the A27 (as now proposed) would result in development vehicles either passing through the Cophall roundabout to the north or the A27 / A2270 junction to the south, but not both. The proposed access strategy therefore reduces the potential impact by development traffic at the Cophall roundabout junction.

1.18 Adopting the revised development quantum and access assumptions summarised above it is possible to make the following statements:

- The proposed number of units (250) would generate fewer development vehicles, and hence less of an impact, than the 520 previously applied for.
- An access on the A27 via a new site access junction would result in fewer development vehicles passing through the Cophall roundabout, compared to planning application 2008/2180, for the same number of residential units. For example, the 250 units now proposed would result in less impact at Cophall roundabout than say 250 units accessed directly from Cophall roundabout as would have been the case under the previous access strategy.
- Assuming the new access strategy, no development vehicles would need to pass through both Cophall roundabout and the A27 / A2770 junction as would have been the case under the previous access strategy.
- The proposed 250 units will have a reduced impact on the Cophall roundabout compared to the 400 units assessed to be accessed directly from Cophall roundabout. Therefore the 2008 TAR would have assessed a more onerous traffic impact scenario at Cophall roundabout than now being proposed.

1.19 For the purpose of this assessment, and to consider a worst case scenario, the increase in delay predicted within the TAR for a sole access at Cophall roundabout (for 400 units) has been adopted for the 250 residential units now being assessed and accessed to the south. This will be an overestimation of the delay caused by 250 units at Cophall roundabout, but facilitates a robust assessment.

1.20 In addition to making a robust assumption for the impact at the Cophall roundabout to the north, the assessment completed within this note assumes that all of the development traffic heads to and from the A27 / A2270 signal controlled junction to the south. In this manner, account is taken of the worst case scenario for interaction between the site access junction and the junction to the south. On reaching the A27 / A2270 junction the development traffic is assumed to distribute in the same proportion as the background traffic.

1.21 The distribution assumptions above ensure a worst case scenario is individually assessed for both the Cophall roundabout to the north and A27 / A2270 junction to the south and therefore collectively for the corridor between these two junctions.

Forecast horizon

1.22 The forecast horizon typically requested by the HA is 10 years post planning application submission. This is consistent with the 2018 forecast contained in the 2008 TAR. This technical note considers a 2022 forecast year on the basis that this would represent a 10 year forecast during the Core Strategy EiP in 2012.

Modelling scenarios

1.23 The Linsig software package has been adopted for modelling purposes. The scenarios assessed are as follows :

- 2022 baseline
- 2022 with development and mitigation

1.24 The Linsig models have all been run such that stage timings and cycle times are optimised.

Baseline traffic flows

1.25 The TAR submitted in support of application 2008/2180 assessed a forecast horizon of 2018. The traffic flows adopted were derived from an ESCC model of the Eastbourne area that was then updated, for the purpose of planning application 2008/2180, to reflect 2008 conditions on the local highway network. The model, and hence its suitability for forecasting traffic flows, was accepted by ESCC and the HA.

1.26 The traffic flows derived for the 2018 TAR baseline scenario (ie without the PW1 development and assuming the existing highway network) are illustrated at Figure 1 (at the rear of this note).

1.27 This note considers a forecast year of 2022 and therefore the agreed 2018 baseline flows above have been factored using the Tempro database to reflect 4 further years of traffic growth. The Tempro growth factor adopted is 1.0785 for the AM peak hour and 1.0820 for the PM peak hour. The 2022 baseline flows predicted are illustrated at Figure 2.

Development traffic generation

1.28 Based upon the trip generation rates summarised at Table 1, Table 2 summarises the predicted traffic generation from 250 residential units. As described above, the development traffic has all been assumed to head to and from the south to facilitate a worst case assessment. Therefore, whilst 250 units has been assessed for the purpose of this note, it is considered that the assessment would remain valid for a greater number of units than this when allowance is made for a more refined distribution assumption. Figure 3 illustrates the development traffic routeing assessed.

"With development" traffic flows

1.29 The flows adopted for the 2022 "with development" assessment are derived by adding the 2022 baseline flows and development flows described above. Figure 4 illustrates the flows adopted for assessment.

Site access junction

1.30 A potential layout for the site access junction that can be delivered within the highway boundary and land ownership of Pelham Holdings is illustrated at Figure 5. The key objectives of this junction are twofold :

- To demonstrate the pedestrian and cycle connectivity that can be delivered between the site and Polegate town centre.
- To demonstrate that highway access and mitigation measures can be delivered to provide vehicular capacity without compromising the operation of the strategic highway network.

1.31 Reference has been made to the Design Manual for Roads and Bridges (DMRB) document, and in particular TD 50/04, in deriving an appropriate illustrative design for the site access junction and crossing facility. The main features shown are as follows :

- Two southbound straight ahead lanes and two northbound straight ahead lanes on the A27 corridor.
- A right turn lane and left turn lane into the site.
- A separate right turn out and left turn out lane from the site.
- Pedestrian and cycle crossing facilities on the site access arm and the north arm.
- The site access junction and proposed crossing of the A27 coincides with 27 Brookside Avenue which is owned by Pelham Holdings. This location has previously been agreed as an acceptable crossing location of the A27 when a bridge at this location was proposed. This is confirmed in the SoCG.
- It is intended that the 27 Brookside Avenue plot will be remodelled to allow for a walk and cycle route to be provided from the A27 onto Brookside Avenue. This will provide a direct walk and cycle connection between the site, the rail station and the town centre. It is confirmed within the SoCG that the 2008 TAR identifies improvements that can be provided to the walk / cycle route between Brookside Avenue and the town centre and

that these improvements are acceptable to ESCC and can be accommodated within the highway boundary.

1.32 The signal controlled junction to the south is preceded by the introduction of a 40mph zone (reducing from the existing, and recently implemented, 50mph zone). The construction of a site access junction could be accompanied by extending the 40mph zone north of the site access junction if this is considered appropriate during detailed design.

Pedestrian access

1.33 It will be important to ensure that pedestrian and cycle crossing of the A27 is directed to the proposed formal crossing point rather than pedestrians and cyclists attempting to cross elsewhere along the A27 corridor. Therefore, appropriate measures (such as fencing) would be required along the site frontage to prevent pedestrians and cyclists from crossing at non designated locations.

1.34 The potential demand of crossing movements using the site access junction has been considered with reference to the 2008 TAR. Within the TAR data has been extracted from the 2001 Census that suggests 61.77% of journeys are made as a car driver compared to 7.24% and 1.54% by walk and cycle respectively.

1.35 On this basis, a two way vehicular traffic generation of 181 vehicles (Table 2) would be associated with a pedestrian generation of 21 trips and cycle generation of 5 cycle trips. This would equate to a potential demand of 26 walk / cycle journeys crossing the A27 corridor during both the morning and evening peak hours. This is approximately 1 movement every 2 minutes.

1.36 A review has been completed of the key local amenities and the walk distance to these from the site boundary using the site access junction and Brookside Avenue. The table below provides a summary of the distances and predicted cycle and walk times.

Facility	Approximate Distance (m)	Approximate Walk Time (assuming 1.2m/s)	Approximate Cycle Time (assuming 15 km/hr)
Train Station	577	8 minutes	2 minutes
High Street	497	7 minutes	2 minutes
One Stop	592	8 minutes	2 minutes
Post Office	587	8 minutes	2 minutes
Primary School	954	13 minutes	4 minutes
High School	1761	24 minutes	7 minutes
Library	1072	15 minutes	4 minutes
Doctors Surgery	539	7 minutes	2 minutes

1.37 It is noted that key amenities are readily accessible from the site by short walking and cycling distances. This would allow residents to meet a proportion of their daily needs through sustainable transport choices.

Emergency access

1.38 Planning application 2008/2180 proposed a single point of access to the site and an emergency access from the A27 to serve an initial phase of 400 units. This is confirmed in the SoCG, with reference to Manual for Streets, and this principle is therefore considered acceptable to the Highway Authorities.

1.39 The principle of a single point of vehicular access to serve 250 units is therefore considered acceptable along with the provision of an emergency access from the A27. It will be necessary to ensure that pedestrians and cyclists can not use the emergency access to access the development. It is therefore proposed that a form of lockable gate would be installed to prevent this movement. The principle of this is similar to a lockable bollard insofar that emergency access vehicles will use a key to access the site in the event that the site access junction is blocked.

Linsig model

1.40 A Linsig model has been developed to model the performance of the existing A27 / A2270 junction (see Figure 6), the proposed site access (see Figure 5) and the mitigation proposals (see Figure 7). Linsig is an industry standard software package used to model the performance of stand alone and linked traffic signal controlled junctions.

1.41 The mitigation scheme for the A27 / A2270 junction is known as the TR3 upgrade scheme. The TR3 reference relates to the Non Statutory Wealden Local Plan Policy TR3. This policy identifies a number of junctions that will require upgrade to facilitate delivery of housing allocations in Polegate and Hailsham. The A27 / A2270 signal controlled junction and Cophall roundabout are amongst these. The current upgrade schemes are accepted in principle by the HA as appropriate mitigation schemes.

1.42 The SoCG confirms that the TR3 upgrades have been the subject of a Stage 1 Safety Audit and this confirms that “there are no road safety problems which cannot be resolved at the detailed design stage”.

Assessment criteria

1.43 It has been considered that the modelling results will need to meet the following criteria to demonstrate the acceptability of the site access strategy proposals:

- Strategic journey times on the A27 corridor must not be adversely affected by implementation of the site access junction. Therefore the “with development” scenario should demonstrate a similar or reduced journey time for strategic traffic when compared to the baseline scenario.
- Connectivity between the site and town centre should be demonstrated for pedestrians and cyclists.
- The A27 / A2270 and site access junctions should provide sufficient vehicular capacity to serve the forecast volumes of background and development traffic.

2022 baseline modelling results

<u>Cophall roundabout</u>

1.44 Whilst the Cophall roundabout has not been explicitly modelled for the purposes of this note, results have been extracted from the TAR that was submitted in support of application 2008/2180. The TRANSYT results contained in the TAR provide a prediction of the journey time around Cophall roundabout for a “2018 do minimum” scenario.

1.45 The TAR “2018 do minimum” scenario (see Figure 8) assumes full signal control of the Cophall roundabout as it was anticipated that delivery of this upgrade was certain and should be included in the baseline. It is considered that the “2018 do minimum” TAR results present a reasonable worst case proxy for a 2022 baseline at this roundabout.

1.46 Table 3 summarises the results of the “2018 do minimum” TAR analysis that are adopted for the purposes of a 2022 baseline scenario within this note. It is noted that delays are particularly evident during the AM peak for westbound journeys with a journey time through the roundabout of 287 seconds compared to the PM time of 50 seconds. The eastbound

journey through the junction is similar in both peak periods at 82 and 84 seconds. It is also noted that the average speed of vehicles through the junction is 9.9kph during the morning peak hour compared to 23.2 kph during the evening peak hour.

A27 / A2270 junction

1.47 The Linsig model developed for the 2022 baseline scenario demonstrates the results contained in Table 4. It is noted from the results summary that the junction is predicted to exceed capacity during both peak hours, with a negative Practical Reserve Capacity. It is further predicted that the junction experiences significant queues and delays in both peak hours and particularly in the eastbound direction.

Combined results

1.48 Combining the modelled journey times through the Cophall roundabout and the A27 / A2270 junction, and the corridor connecting the two junctions, provides a prediction of the journey time for strategic journeys on the trunk road in this location. Tables 5 and 6 provide a summary of the predicted journey times for the 2022 baseline scenario.

1.49 In summary the morning peak hour journey takes 360 seconds and 663 seconds for the westbound and eastbound directions respectively. During the evening the journey takes 110 and 471 seconds respectively.

2022 "with 250 units development and mitigation" modelling results

Cophall roundabout

1.50 Results have again been extracted from the TAR that was submitted in support of application 2008/2180. The TRANSYT results contained in the TAR provide a prediction of the journey time around Cophall roundabout for a "2018 with a development of 400 units" scenario.

1.51 The "2018 with a development of 400 units" scenario (see Figure 9) assumes further improvements to the Cophall roundabout (compared to the "2018 do minimum" scenario) and this is referred to as the TR3 upgrade. It is considered that the "2018 with a development of 400 units" TAR results present a reasonable worst case proxy for the 2022 "with 250 units development and mitigation" scenario considered within this note on the following basis :

- The proposed development of 250 units generates fewer trips than 400 units.
- The development traffic for the 400 units was all assumed to use, and hence impact, the Cophall roundabout. A new access to the south will mean that only a proportion of the traffic from 250 units will use, and hence impact, the Cophall roundabout.
- The proposed development of 400 units added a sixth arm to the Cophall roundabout and hence a new set of stop lines (and the associated stopping delay of traffic) on the gyratory. The proposed access to the south will not add any further arms to the Cophall roundabout - development traffic will instead use an existing arm (A27 south).

1.52 Table 7 summarises the TAR "2018 with a development of 400 units" scenario results that are adopted for the purposes of a 2022 "with 250 units development and mitigation" scenario considered within this note. It is noted that delays have reduced when compared to the 2022 baseline and this is particularly evident during the AM peak for westbound journeys. It is noted that the average speed of vehicles through the junction is increased to 22.3kph (from 9.9kph) during the morning peak hour and unchanged at 23.2 kph during the evening peak hour.

A27 / A2270 junction and site access

1.53 The Linsig model developed for the 2022 "with 250 units development and mitigation" scenario demonstrates the results contained in Table 8. It is noted from the results summary that the junction is predicted to work with positive Practical Reserve Capacity during both

peak hours. It is further predicted that the junction experiences a significant reduction in queues and delays in both peak hours when compared to the baseline.

Combined results

1.54 Combining the modelled journey times through the Cophall roundabout and the A27 / A2270 junction, and the corridor connecting the two junctions, provides a prediction of the journey time for strategic journeys on the trunk road in this location. Tables 9 and 10 provide a summary of the journey times for the with development scenario.

1.55 In summary the morning peak hour journey takes 138 seconds and 163 seconds for the westbound and eastbound directions respectively. During the evening the journey takes 124 and 155 seconds respectively.

Comparison of 2022 baseline and 2022 "with 250 units development and mitigation"

1.56 A comparison of the 2022 baseline and the 2022 "with 250 units development and mitigation" results demonstrates the following:

Morning peak hour

- The journey time reduces significantly from 663 seconds to 163 seconds in the eastbound direction when the development and mitigation measures are implemented.
- The journey time reduces significantly from 360 seconds to 138 seconds in the westbound direction when the development and mitigation measures are implemented.
- The combined total junction delay reduces from 411 PCU Hrs (for the baseline scenario) to 90 PCU Hrs (with 250 units and the TR3 mitigation measures implemented).

Evening peak hour

- The journey time reduces significantly from 471 seconds to 155 seconds in the eastbound direction when the development and mitigation measures are implemented.
- The journey time increases marginally from 110 seconds to 124 seconds in the westbound direction when the development and mitigation measures are implemented.
- The combined total junction delay reduces from 206 PCU Hrs (for the baseline scenario) to 77 PCU Hrs (with 250 units and the TR3 mitigation measures implemented).

1.57 On the basis of the above modelling results it is evident that the implementation of the site access junction in combination with the TR3 upgrade options at the Cophall roundabout and the A27 / A2270 junction provide a significant betterment in terms of trunk road and junction operation.

Summary and conclusions

1.58 Within this note, consideration has been given to a residential development of 250 units at PW1. Reference has been made to a previous planning application submitted for a larger residential development at PW1, and the assessment parameters agreed with Highway Officers

1.59 Whilst a vehicular access strategy was agreed with Officers for the previous planning application site, those proposals would not be appropriate, both in terms of location and scale, to serve a development of around 250 units now being promoted. Therefore, a revised access strategy has been developed to demonstrate access for vehicles, pedestrians and cyclists to the site.

1.60 The proposed access strategy is a signal controlled site access junction on the A27 corridor in tandem with mitigation measures at the signal controlled junction to the south and the Cophall roundabout to the north. In addition, direct walking and cycling connectivity to the town centre would be provided across the A27 corridor via the site access junction and remodelled 27 Brookside Avenue plot. This will place key amenities within a direct and readily accessible walk and cycle distance from the site.

1.61 Analysis has been completed to demonstrate the effects of the site access junction, development traffic and mitigation measures on the trunk road network. The traffic generation and distribution assumptions adopted within this note ensure a worst case scenario is individually assessed for both the Cophall roundabout to the north and A27 / A2270 junction to the south and therefore collectively for the corridor between these two junctions.

1.62 This technical note considers a 2022 baseline and 2022 “with development” scenario. A Linsig model has been developed to model the performance of the existing A27 / A2270 junction, the proposed site access and the mitigation proposals for both scenarios. With respect to the Cophall roundabout results have been extracted from the TAR that was submitted in support of application 2008/2180.

1.63 A comparison of the 2022 baseline and the 2022 “with 250 units development and mitigation” results demonstrates the following:

- During the morning peak hour the through route journey time reduces significantly in both directions when the development and mitigation measures are implemented. The total junction delay also reduces significantly.
- During the evening peak hour the through route journey time reduces significantly in the eastbound direction and increases marginally in the westbound direction when the development and mitigation measures are implemented. The total junction delay also reduces significantly.

1.64 On the basis of the above modelling results it is evident that the implementation of the site access junction in combination with the TR3 upgrade options at the Cophall roundabout and the A27 / A2270 junction provide a significant betterment in terms of trunk road and junction operation, with reduced journey times and significantly reduced junction delay.

TABLES

Table 1 – Trip generation rates per residential unit

	AM in	AM out	AM 2 way	PM in	PM out	PM 2 way
Residential	0.27	0.45	0.72	0.45	0.27	0.72

Table 2 – Development trip generation (250 residential units)

	AM in	AM out	AM 2 way	PM in	PM out	PM 2 way
Residential	68	113	181	113	68	181

Table 3 – 2018 TAR junction performance for Cophall roundabout (Do Minimum)

Route through Cophall roundabout	**AM**	**PM**
Westbound on the A27 to Southbound on the A27	287 secs	50 secs
Northbound on A27 to Eastbound on the A27	82 secs	84 secs
Mean journey speed reported by TRANSYT	9.9 kph	23.2 kph
Total delay	138 PCU Hrs	36 PCU Hrs

Table 4 – 2022 junction performance for A27 / A2270 (Baseline)

	AM results	**PM results**
Junction Practical Reserve Capacity (all lanes)	- 51.5 %	- 33.7%
Total junction delay (all arms)	273 PCU Hrs	170 PCU Hrs
Westbound journey time (A27 north to A27 west)	37 secs	24 secs
Eastbound journey time (A27 west to A27 north)	545 secs	351 secs
Largest Queues	• 157 PCUs from A27 to A27 • 142 PCUs from A2270 to A27	• 99 PCUs from A27 to A27 • 67 PCUs from A2270 to A27 • 57 PCUs from A2270 to A27

Table 5 – 2022 westbound corridor journey times (Baseline)

Route section	AM	PM
A27 westbound passing through Cophall junction	287 secs	50 secs
A27 southbound to A27 / A2270 junction (assume 800m at 80kph / 50mph)	36 secs	36 secs
A27 westbound passing through A27 / A2270	37 secs	24 secs
Total westbound journey time	**360 secs**	**110 secs**

Table 6 – 2022 eastbound corridor journey times (Baseline)

Route section	AM	PM
A27 eastbound passing through A27 / A2270	545 secs	351 secs
A27 northbound to Cophall roundabout (assume 800m at 80kph / 50mph)	36 secs	36 secs
A27 eastbound passing through Cophall roundabout	82 secs	84 secs
Total eastbound journey time	**663 secs**	**471 secs**

Table 7 – 2018 TAR junction performance for Cophall roundabout (400 units)

Route through Cophall roundabout	AM	PM
Westbound on the A27 to Southbound on the A27	53 secs	48 secs
Northbound on A27 to Eastbound on the A27	82 secs	80 secs
Mean journey speed reported by TRANSYT	22.3 kph	23.2 kph
Total delay	44 PCU Hrs	40 PCU Hrs

Table 8 – 2022 junction performance for A27 / A2270 junction (250 units)

	AM results	PM results
Junction Practical Reserve Capacity (all lanes)	5.2 %	20.1%
Total junction delay (all arms)	46 PCU Hrs	37 PCU Hrs
Westbound journey time (A27 north to A27 west)	62 secs	53 secs
Eastbound journey time (A27 west to A27 north)	58 secs	52 secs

Largest Queues	• 16 – 17 PCUs on A27 northbound at site access • 12 PCUs southbound on A27 at south junction • 13 PCUs on A2270 heading to A27 northbound	• 12 – 14 PCUs on A27 northbound at site access • 15 PCUs on A2270 turning left onto A27

Table 9 – 2022 westbound corridor journey times (250 units)

Route section	AM	PM
A27 westbound passing through Cophall junction	53 secs	48 secs
A27 southbound to site access junction (assume 520m at 80kph / 50mph)	23 secs	23 secs
A27 westbound passing through A27 / A2270	62 secs	53 secs
Total westbound journey time	**138 secs**	**124 secs**

Table 10 – 2022 eastbound corridor journey times (250 units)

Route section	AM	PM
A27 eastbound passing through A27 / A2270	58 secs	52 secs
A27 northbound to Cophall roundabout (assume 520m at 80kph / 50mph)	23 secs	23 secs
A27 eastbound passing through Cophall roundabout	82 secs	80 secs
Total eastbound journey time	**163 secs**	**155 secs**

Table 11 – 2022 comparison of corridor journey times

Direction	AM journey times		PM journey times	
	Baseline	With 250 units	Baseline	With 250 units
Eastbound	663 secs	163 secs	471 secs	155 secs
Westbound	360 secs	138 secs	110 secs	124 secs

Table 12 – 2022 comparison of junction delay

	AM delay (PCU Hrs)		PM delay (PCU Hrs)	
	Baseline	**With 250 units**	**Baseline**	**With 250 units**
Cophall roundabout	138	44	36	40
A27 / A2270 junction	273	46	170	37
Total delay	**411**	**90**	**206**	**77**

FIGURES

Figure 1 – 2018 baseline turning flows (AM left and PM right)

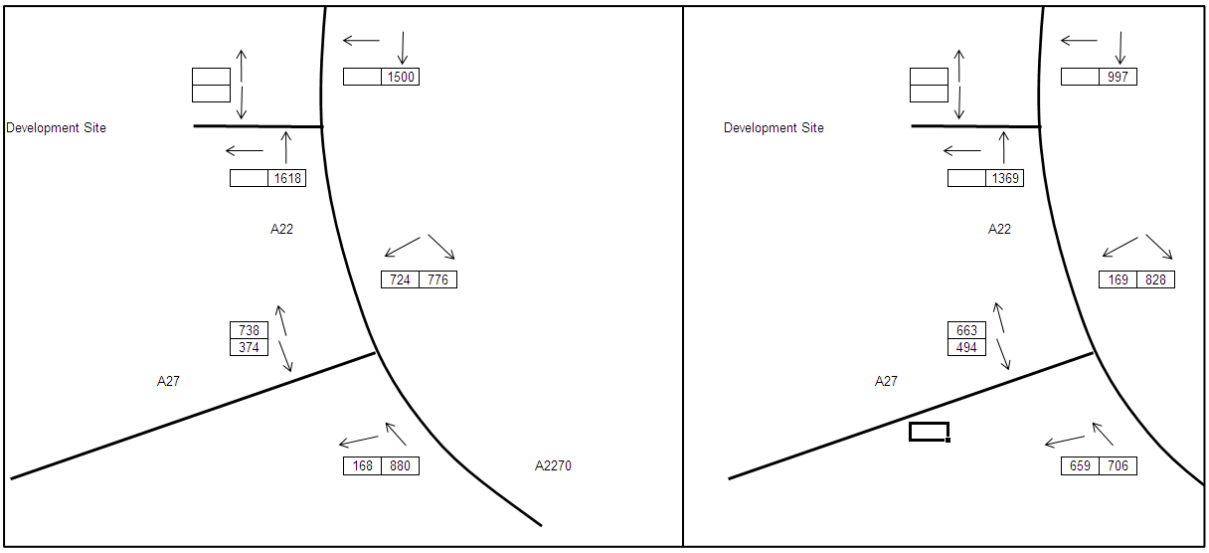


Figure 2 – 2022 baseline turning flows (AM left and PM right)

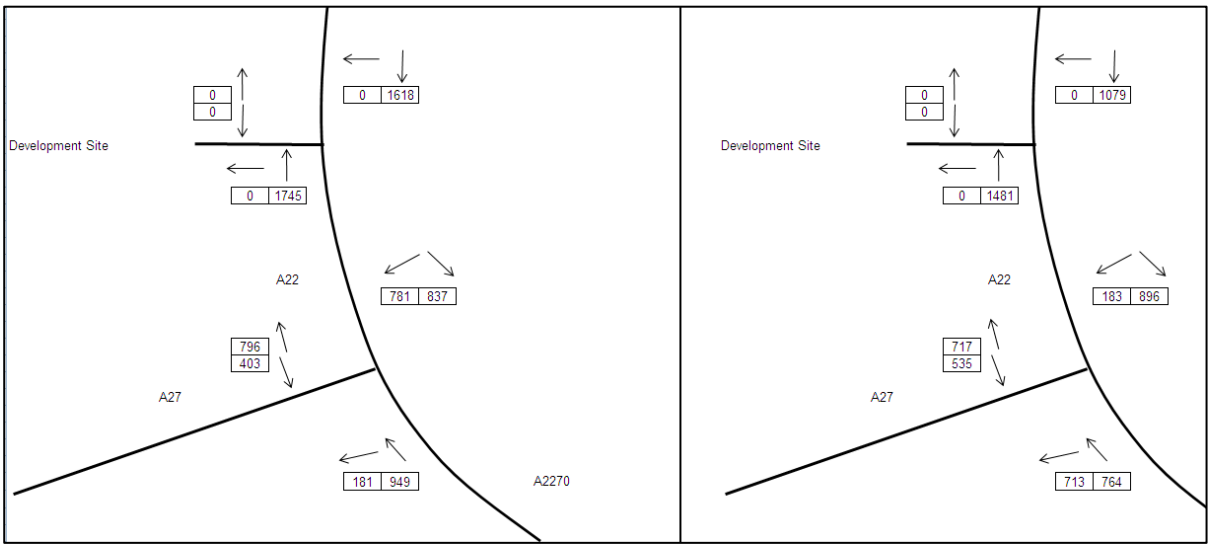


Figure 3 – Development traffic turning flows (AM left and PM right)

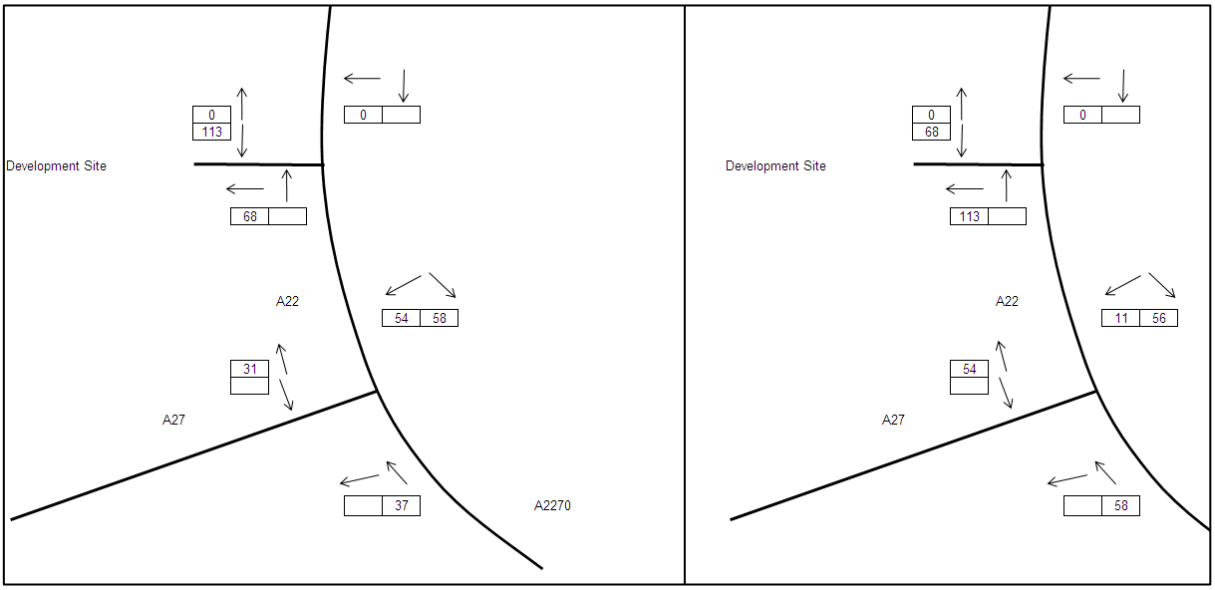


Figure 4 – 2022 with development turning flows (AM left and PM right)

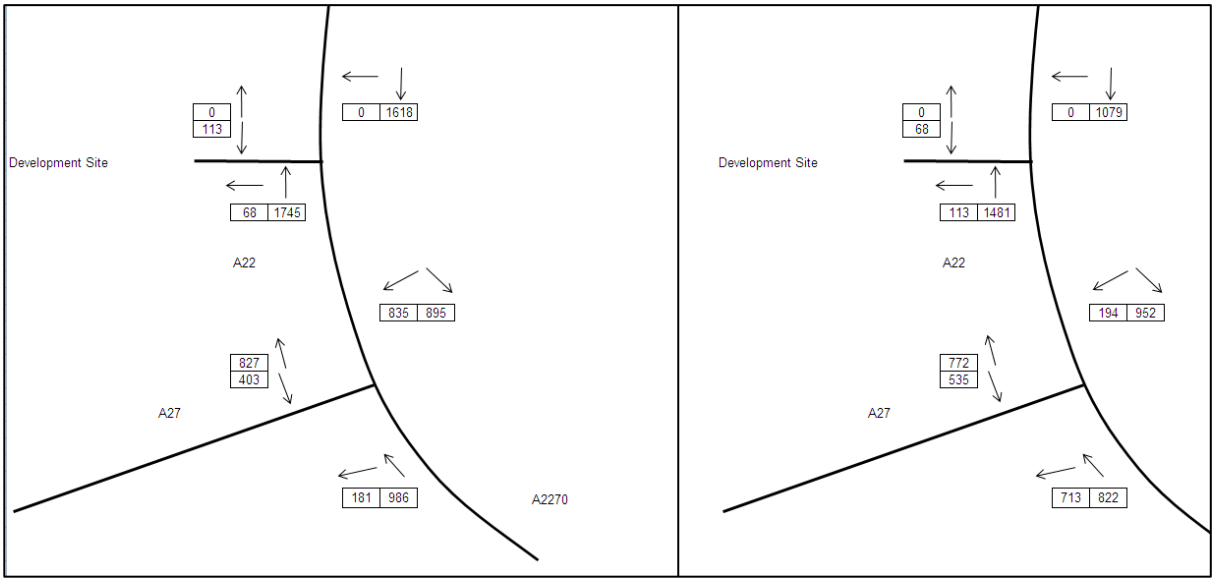


Figure 5 – Illustrative site access junction option

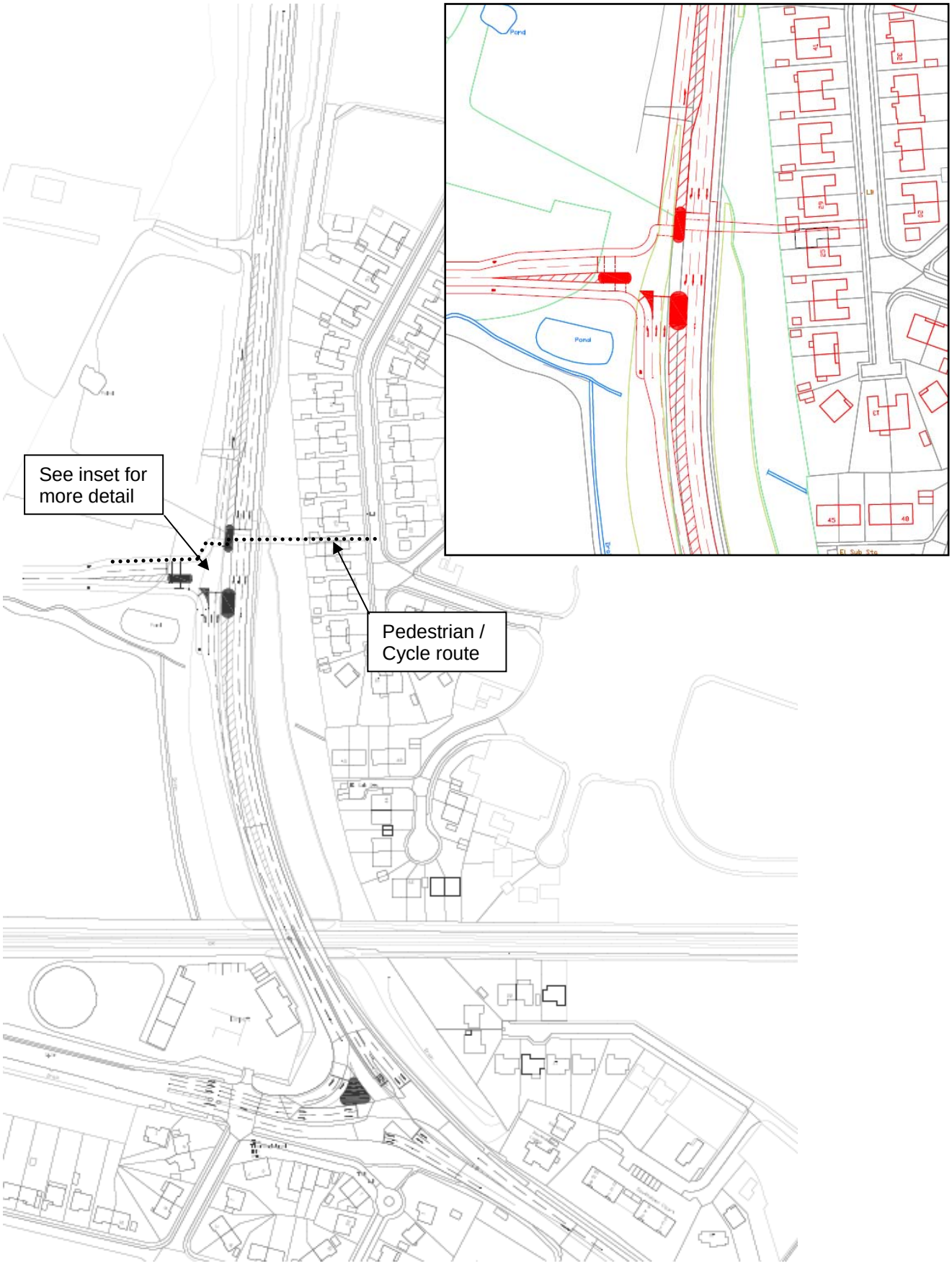


Figure 6 – Existing junction layout (A27 / A2270)

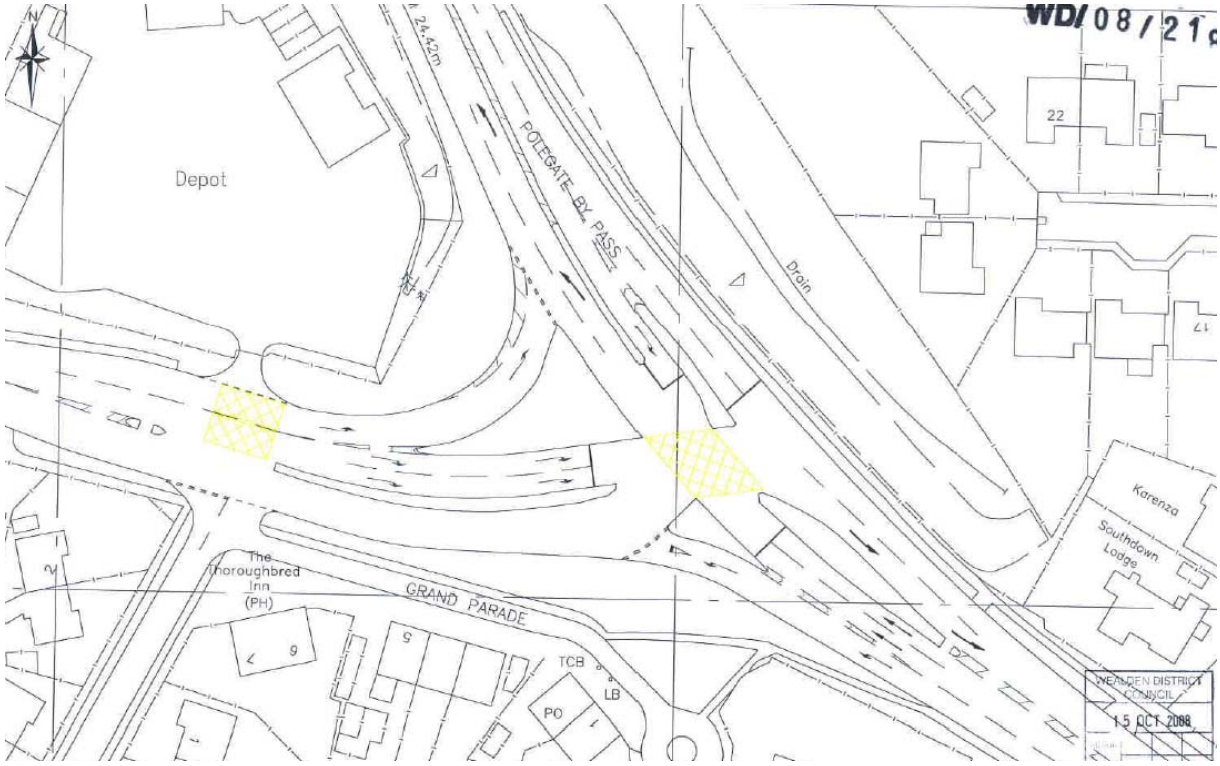


Figure 7 – Mitigation junction layout – TR3 scheme (A27 / A2270)

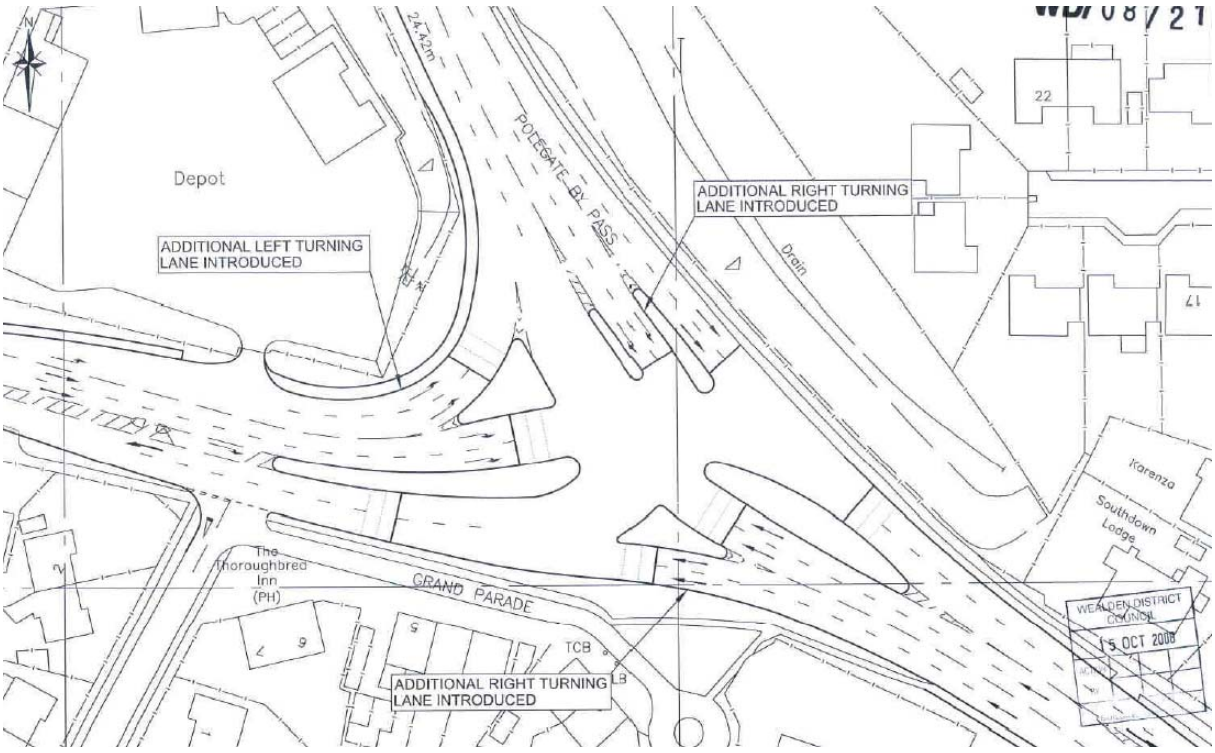


Figure 8 – Cophall roundabout – full signal control

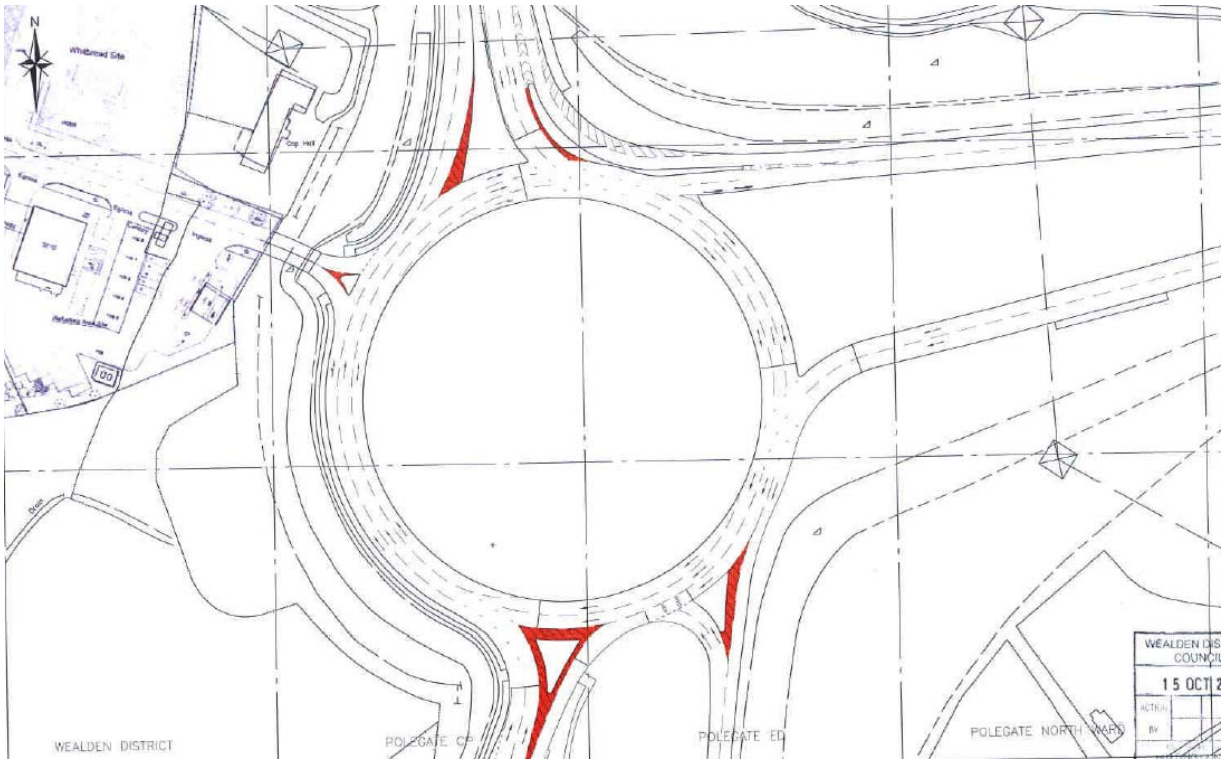


Figure 9 – Cophall roundabout mitigation junction layout – TR3 scheme

