

CS10: Transportation and Movement

Scheme: Junction 21 Outbound Capacity Scheme and J21 Bypass Scheme

Scheme Prioritisation within Infrastructure Delivery Plan: Critical

Cost Estimate:

Junction 21 Outbound Capacity Scheme £4.5M in 2011/12 prices

J21 Bypass as a single carriageway alignment £11m in 2010/11 prices. Estimate extrapolated from South Bristol Link scheme cost estimate.

Funding Source:

Junction 21 Outbound Capacity Scheme - a funding strategy has been compiled and is to be considered by the council's Capital Board in November 2011.

J21 Bypass - funding source to be determined. This is a long term scheme.

Expected Completion Date:

Junction 21 Outbound Capacity Scheme - construction complete July 2013

J21 Bypass Scheme – this is a long term scheme, it is not expected to be taken forward until the later years of the Core Strategy period i.e. 2021-26

Scheme Description:

There are a total of three planned enhancement schemes for Junction 21 of the M5, spread between the short to long term. These are:

1. J21 enhancement works to be delivered through 'Weston Package' major transport scheme – subject to confirmation of funding scheme completion is October 2013,
2. Additional J21 enhancement works termed 'J21 Outbound Capacity Scheme' to be delivered alongside 'Weston Package' – subject to confirmation of funding scheme completion is October 2013
3. J21 Bypass – a scheme that by-passes the A370 away from the J21 roundabout to a separate alignment to the south, utilising the existing Wolverhill Road bridge over the M5.

Scheme 1. above forms part of the council's 'Weston Package' major transport scheme. This scheme entails widening part of the J21 roundabout to accommodate additional traffic lanes and widening and traffic signal works to the south bound and north bound off-slips. For further details about this scheme see separate Weston Package evidence submission.

Scheme 2. above is a relatively recently developed scheme to specifically provide a modest increase in outbound highway capacity in the morning peak. The scheme entails the provision of a dedicated left turn lane from

Somerset Avenue onto the J21 north bound on-slip. The entrance of the north bound on-slip is to be widened providing two traffic lanes which then merge into one lane halfway down the on-slip and retaining a one lane merge with the M5 main line. The scheme also includes the signalisation of the junction between Somerset Avenue (A370) and Bristol Road (B3440).

Scheme 3. is a longer term scheme involving significant new build of highway to by-pass the A370 away from the J21 roundabout onto a separate alignment to the south, utilising the existing Wolverhill Road bridge over the M5. The scheme alignment is approximately 3½ km, and also involves land take for major junctions where the alignment joins the existing highway network to the north and south. The scheme was originally scoped as a dual carriage configuration, where one of the dual carriageways would utilise the existing Wolverhill Road bridge over the M5 and a new bridge would be constructed for the alignment in the opposite direction of travel. The economic case for a dual carriageway alignment may now not withstand scrutiny in light of shifting central government policy direction. A single carriageway alignment however, is likely to achieve a sound economic case, given the greatly reduced cost of delivery as a result of not requiring a new bridge structure over the M5, i.e. a cost of approx £11m compared with approximately £50m.

Scheme Deliverability:

Scheme 2 - 'J21 Outbound Capacity Scheme'

A concept design has been undertaken and modelled with VISSIM, a micro-simulation traffic model. The design work stream is currently being progressed to feasibility and preliminary design stages, followed by detailed design in May 2012.

The scheme works are entirely within the highway boundary and therefore falls under highway permitted development provisions. The scheme involves work to both the Highway Agency's network and the councils' local highway network.

The works to the north bound on-slip are within the Highways Agency's network therefore it is necessary to gain Agency approval for the scheme. The council commenced engagement with the Agency earlier this year, and continues to meet on a regular basis. In response to the concept design and transport modelling work undertaken by the council to date, the Agency recently confirmed that they support the scheme in principle.

Details regarding how the scheme relates to the Highways Agency's network are set out in the Scheme Justification section below. Construction is programmed to commence October 2012 with completion October 2013.

The scheme is fully supported by the councils' Executive member for Strategic Planning, Highways and Economic Development and is a high priority for the council in respect of the allocation of resources. A scheme

funding strategy has been compiled and is to be considered by the council's Capital Board in November 2011.

Scheme 3 - 'J21 Bypass'

To date only high level scheme feasibility studies have been undertaken. In terms of scheme design only a basic scheme alignment has been drafted. Originally the scheme concept entailed a dual carriageway configuration, however more recent optioneering work has shown that a single carriage configuration would accommodate the estimated traffic volumes.

The scheme would entail significant new build of highway and therefore would require an Environmental Impact Assessment and major planning application. The scheme does not involve any alterations to the trunk road network, therefore does not require Highways Agency approval. The scheme is included in the 3rd Joint Local Transport Plan (2011-2026) as a scheme for delivery in the longer term. While a funding source is yet to be determined, the scheme was previously prioritised within the region and achieved a Regional Funding Allocation.

In terms of scheme programming further transport modelling and assessment work is needed to inform exact scheme delivery timescales. Work to date indicates that the additional capacity provided by scheme 2 (J21 Outbound Capacity scheme) will be fully utilised by 2026 and queue lengths on Somerset Avenue will be slightly longer than 2010 levels. Consequently, the council is likely to want to progress the Bypass scheme and deliver it in advance of 2026, this could be anytime from around 2021 onwards, depending upon development rate of build.

Scheme Justification:

J21 Current Context

Population growth in Weston-super-Mare over the last decade has placed increased pressure on the towns transport network and in particular upon external facing corridors. The most significant external corridor in terms of socio-economic activity is the Weston-super-Mare to Bristol corridor, via the A370, M5 and local rail service. J21 dissects the A370 on the eastern fringe of Weston-super-Mare. J21 plays a strategic infrastructure function giving access to primary routes northwards via the M5 and access to the primary A370 route eastwards to Congresbury and service towns to Bristol.

The junction has a number of capacity constraints, the most notable of which is the limitation of the single lane feeding onto the north bound on-slip and through to the merge with the M5 main line. Weston-super-Mare has a significant out commuting traffic flow, which as a result of the limitations of the north bound on-slip, causes extended queuing in the morning peak on Somerset Avenue and Bristol Road. The limited capacity of the north bound on-slip is essentially an historic characteristic dating back to the original design of the junction in the early 1970's. Most of the M5 junctions between Bristol and Taunton have slip roads that are configured with either two lanes merging to one lane or two lanes throughout, serving towns with lower

populations than Weston's 80,000+ residents.

North Somerset Council's approach to addressing the problems of J21 and consequential queuing on the local highway network up until quite recently was to focus on delivering the J21 Bypass. However, the squeeze on public sector finances and changing central government policy direction over the last year or so, has meant that the J21 Bypass is not deliverable in the short/medium term, through conventional public sector resources.

Therefore over the last 12 months the council has developed proposals to enhance the current capacity of J21 to address both the current traffic problems and to accommodate traffic growth as a result of the Core Strategy development proposals.

Scheme 2 - 'J21 Outbound Capacity Scheme' - Scheme Performance

The scheme provides a modest increase in highway capacity on Bristol Road, Somerset Avenue, and the north bound on-slip. The additional capacity caters for an additional 110 vehicles onto the M5 in the peak hour, and provides additional stacking capacity on Bristol Road. This additional capacity is sufficient to deal with the forecast demand arising from the Core Strategy development proposals and underlying background growth in the early years. By 2026 the queue lengths in the AM peak on Somerset Avenue are forecast to be slightly longer than current queue lengths, however the forecast uses existing outbound trip rates based on existing journey to work patterns. Taking account of the Core Strategy employment led approach to development and the planned capacity enhancement to Worle rail station (via Weston Package), there is potential for outbound car borne trip rates to fall and this would result in reduced queue lengths on Somerset Avenue.

The effect of the scheme on Bristol Road is more positive in that queue lengths will reduce significantly aided by the introduction of traffic signals at the junction with Somerset Avenue, which enable a more even balance of traffic flows between the two road links. The reduced queue lengths on Bristol Road mean that traffic no longer backs onto Queensway junction and as a result traffic flows more freely through the junction for all road users. Reducing delays at Queensway junction is an essential for delivering the councils transport objectives to improve the provision and performance of local bus services to Worle station and express bus services to Bristol.

Scheme 3 - 'J21 Bypass' - Scheme Performance

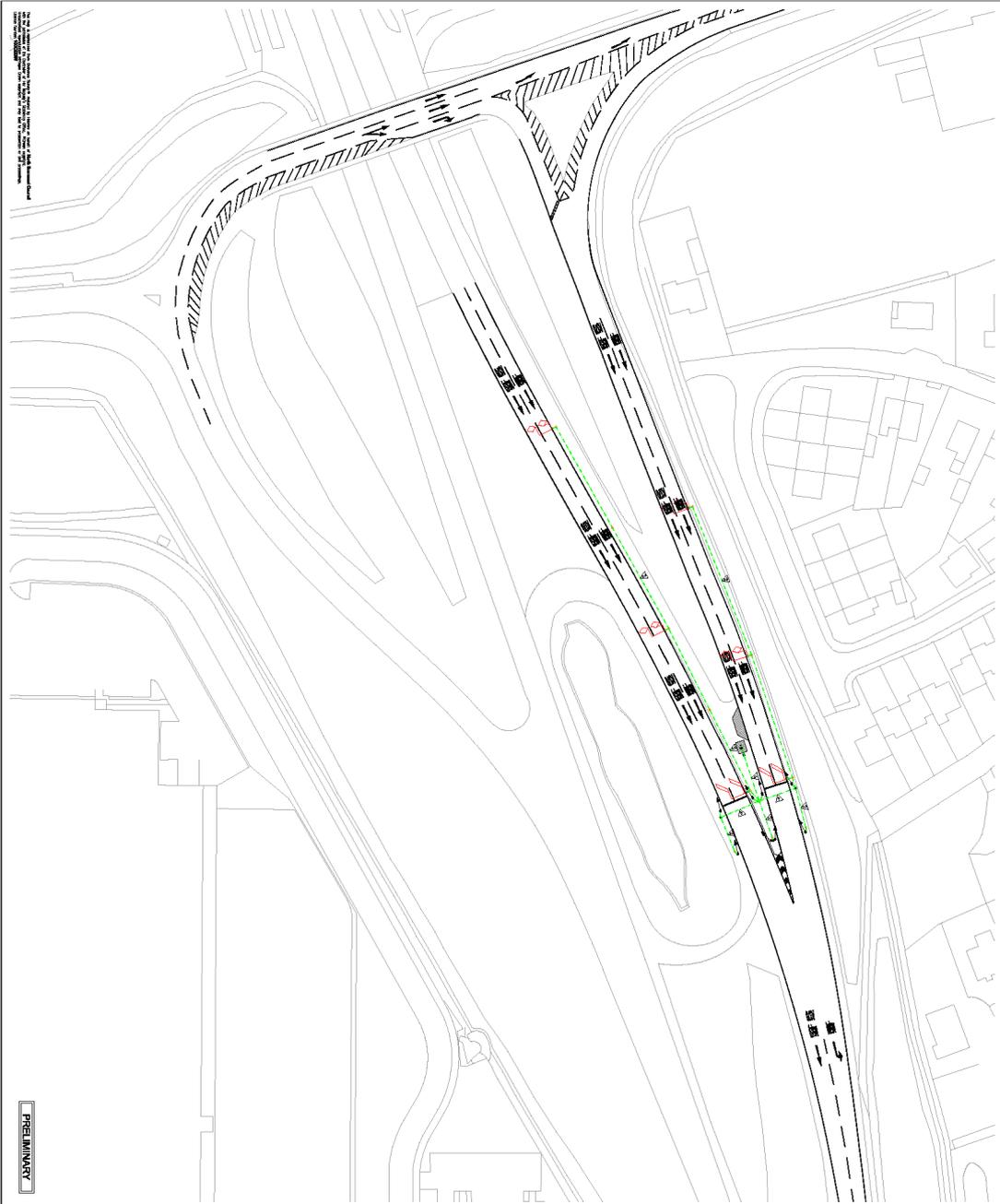
Scheme 3 - J21 Bypass is a longer term scheme in addition to scheme 2 - J21 Outbound Capacity Scheme, it is not an alternative to scheme 2.

The location of the Bypass scheme alignment is approx 2km south of J21, in an area that is currently relatively unpopulated, but set for major development through the Core Strategy proposals. Outbound motorists accessing the Bypass scheme alignment would arrive predominately from West Wick roundabout. Access would also potentially be available via Scot Elm Drive but would be limited mainly to the West Wick housing

development as most motorists from the adjacent St. Georges and north Weston area would achieve better journey times by using J21, rather than the bypass. The scheme could also play a role in reducing traffic pressure on Banwell, however this would lead to increased traffic on the B3133 (Stock Lane) between Congresbury and Lower Langford, which currently has significant highway route deficiencies, in terms highway width and lack of a footpath.

Overall, the Bypass scheme is seen as a necessary long term highway capacity enhancement in the context of the Core Strategy development proposals. However further transport modelling and assessment will be needed, in addition to a full Environmental Impact Assessment, as part of any major planning application for the scheme.

Junction 21 Outbound Capacity Scheme



PRELIMINARY

Client: North Somerset Council
Project Name: A370 / B3440 JUNCTION PROPOSED SIGNALISATION
Contract Ref: CTRAEB-410P001

Contractor: Halcrow

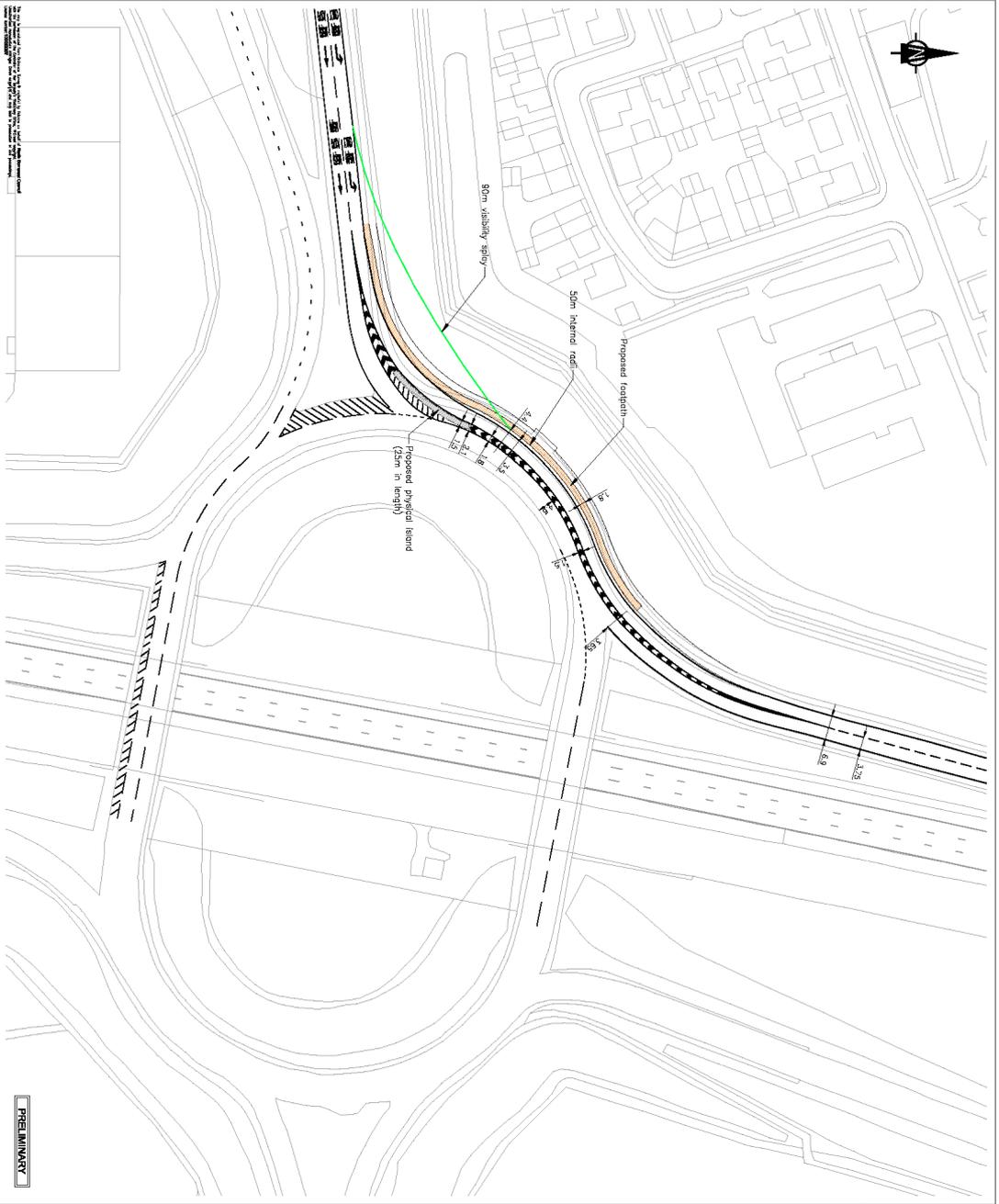
Weston Package

Scale: 1:1000

Drawn by: [Name]
Checked by: [Name]
Approved by: [Name]

Date: [Date]

Revision: [Number]



PRELIMINARY

PROPOSED SEGREGATED LEFT TURN LAYOUT

WESTON PACKAGE

Halcrow

North Somerset

CTA-IEB-410/P/02

Key Plan

Notes:

