



A720 Sheriffhall Roundabout

DMRB Stage 1 Scheme Assessment Report

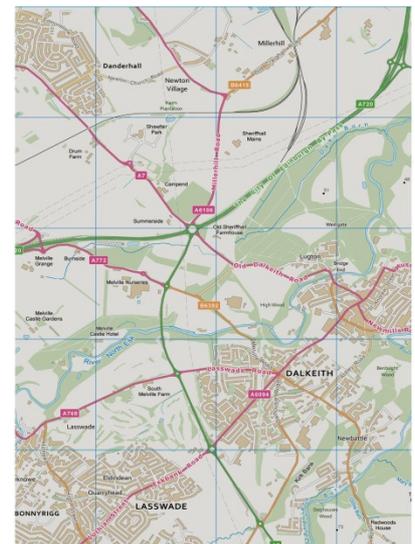
Executive Summary

September 2014

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Prepared for:
Transport Scotland

UNITED
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EXECUTIVE SUMMARY

Sheriffhall Roundabout is the only at-grade junction on the A720 Edinburgh City Bypass. It is a six arm roundabout located at the junction of the A720, A7 and A6106 south of Edinburgh. Sheriffhall is underlain by a geological fault and this coupled with the presence of historical mine workings initially led to the provision of a roundabout at Sheriffhall in preference to grade separation. Mining activity in the area has since stopped.

Sheriffhall Roundabout has undergone various improvements including localised widening, signalisation and the provision of additional lanes to try and alleviate the delays which occur at the junction. Despite the improvements, a congestion problem persists, particularly during peak hours.

Surveys carried out in October 2013 found that the 12-hour 2-way traffic flows were approximately 37,500 on the A720 west of Sheriffhall Roundabout, and approximately 38,000 east of Sheriffhall Roundabout. The at-grade roundabout at Sheriffhall can lead to significant localised queuing, especially during the AM and PM peak periods. Accident records from the six year period between 2007 and 2012 indicate there have been a total of 72 road traffic collisions on the A720 from approximately 1 kilometre to the west of Gilmerton Junction to Millerton Junction, 3% being fatal collisions, 7% being serious collisions and 90% being slight collisions.

There are extensive plans for future residential and business development within the vicinity of Sheriffhall, including the South East Wedge (Shawfair) development. Sheriffhall also provides access to a number of growth areas, including the South East of Edinburgh where an Enterprise area has recently been established, and large developments along the A7 corridor. Sheriffhall also provides access from the east of Edinburgh City area to the growth areas around the West of Edinburgh and the M8 Corridor.

Junction Improvements at Sheriffhall were identified as part of the Strategic Transport Projects Review (STPR), published in December 2008. Intervention 22 recommends targeted road congestion / environmental relief schemes, including junction improvements at the Sheriffhall roundabout.

URS were appointed by Transport Scotland in July 2013 to provide clarity on the most appropriate form of junction and to update the previous work done by Atkins in 2008. The Stage 1 Report therefore updates the previous study, in light of the delivery of Dalkeith Bypass, changes in traffic flows on the approach routes to Sheriffhall, and growth in traffic from development in SESplan and relevant Local Development Plans.

Other than the existing road network, which includes the A720, A7, A6106 and A772, further constraints within the immediate study area include:

- The Borders Railway (currently under construction);
- ground conditions, historical mine workings and geological fault;
- residential buildings, listed buildings including Summerside Farmhouse, Old Sheriffhall Farmhouse, and scheduled monuments including Melville Grange; and
- the Dean Burn.

A total of eight junction options underwent DMRB Stage 1 scheme assessment. Options 1 to 6 were based on those which were reported in the A720 Sheriffhall Roundabout, Feasibility Study STAG 1. Options 7 and 8 were developed as part of this study. The eight options were subject to an engineering, environmental and traffic and economic assessment in accordance with DMRB Stage 1 Assessment, namely:

- Option 1: Dumbbell grade separation at Sheriffhall;
- Option 2: All slips provided at Gilmerton, no connection at Sheriffhall;
- Option 3: Squareabout at Gilmerton, A7 bridged over A720;
- Option 4: Collector Distributor, no connection at Sheriffhall;
- Option 5: Combined Gilmerton and Sheriffhall junctions;

- Option 6: Grade Separated Roundabout at Sheriffhall;
- Option 7: Dumbbell Grade Separation at Sheriffhall, Gilmerton slips closed; and
- Option 8: Dumbbell Grade Separation West of Sheriffhall, Gilmerton Slips closed.

All eight options were presented at a Value Management Workshop with key Stakeholders in attendance. The workshop presented the preliminary options and re-looked at the project issues and the risk register. The following scheme objectives were agreed:

- Improve the movement of traffic on the A720 between Gilmerton and Old Craighall by providing grade-separation of the A720 at the existing Sheriffhall Roundabout.
- Reduce conflict between strategic and local traffic;
- Minimise traffic impact of local proposed developments in Midlothian, East Lothian and City of Edinburgh on the A720 between Gilmerton Junction and Old Craighall Junction and approach roads;
- Improve road safety for all road users on the A720 and approach roads between Gilmerton Junction and Dalkeith Northern Bypass;
- Minimise intrusion of the new works on the natural environment, cultural heritage and people whilst enhancing the local environment where opportunities arise;
- Facilitate integration for different modes of transport along and across the A720 corridor between Gilmerton Junction and Dalkeith Northern Bypass; and
- Reduce severance by improving accessibility across the A720 for all users.

The DMRB Stage 1 engineering assessment suggests that there are no insurmountable engineering issues with all options being feasible, albeit some geometry relaxations will be required to minimise the impact on the local environment. The main engineering risks relate to the ground conditions, which are broadly similar for all options. Further consideration of historical data is recommended during Stage 2 followed with targeted ground investigation on identification of the preferred junction option.

Data collection has demonstrated the prevalence of congested traffic conditions with traffic travelling on the A720 suffering significant delays, particularly during peak times. Given the levels of local proposed development, these congested conditions can only get worse. The Stage 1 Assessment has demonstrated that there is an overwhelming need for an intervention and the proposed junction improvements are likely to generate significant benefits to traffic using the A720 by removing delays associated with the existing at-grade roundabout.

Initial assessment has shown that there are no major environmental constraints or designations within the immediate vicinity of the junction options, and that there are no major environmental impacts associated with any of the options that would prevent them being taken forward to Stage 2. In summary, all options have similar impacts and it is concluded that the main differences in relation to environmental impact are related to the size of the footprint of each option.

The options were also considered against the scheme objectives. As described above, all options have similar environmental impacts with no major issues, generally the main differences being associated with the size of the footprint. All options are assessed as having similar potential safety benefits as removing the at-grade roundabout should reduce the number of traffic collisions on the A720. Removing the at-grade roundabout at Sheriffhall would reduce severance and improve accessibility for all options.

Grade separation would also reduce conflict of local and strategic traffic, however Options 2, 3, 4 and 5 would require strategic traffic to travel greater distances off the A720 to make connections. Grade separation will also facilitate integration of different modes of transport, including Non Motorised Users and buses, with removal of the current barrier presented by the A720. Therefore, NMUs will benefit from all junction options. There is the potential to support bus routes and initiatives for all options with some options having more direct links to the Shawfair Park and Ride. Whilst all options will benefit traffic on the A720 by

providing more free flowing traffic through Sheriffhall, options which change existing levels of access will re-distribute traffic at adjacent junctions on the A720 and local roads, resulting in greater interaction with non-strategic traffic and increased travel times for A7/A6106 traffic. Options 2, 3, 4 and 5 will add traffic to Gilmerton junction, Option 4 will add traffic to Millerhill junction.

Work to date has demonstrated the need for an improvement at Sheriffhall and initial consultation has shown that there is a widespread desire for an improvement at the earliest possible date. At this relatively early stage of scheme development, there is little to separate Options with respect to performance against scheme objectives with the principal differentiators being scheme footprint and junction operation and capacity.

Options 1, 6 and 8 all address the central objective of providing grade separation at Sheriffhall without a change to the existing level of access. In contrast Options 2, 3, 4, 5 and 7 all result in a different level of junction access to that which currently prevails.

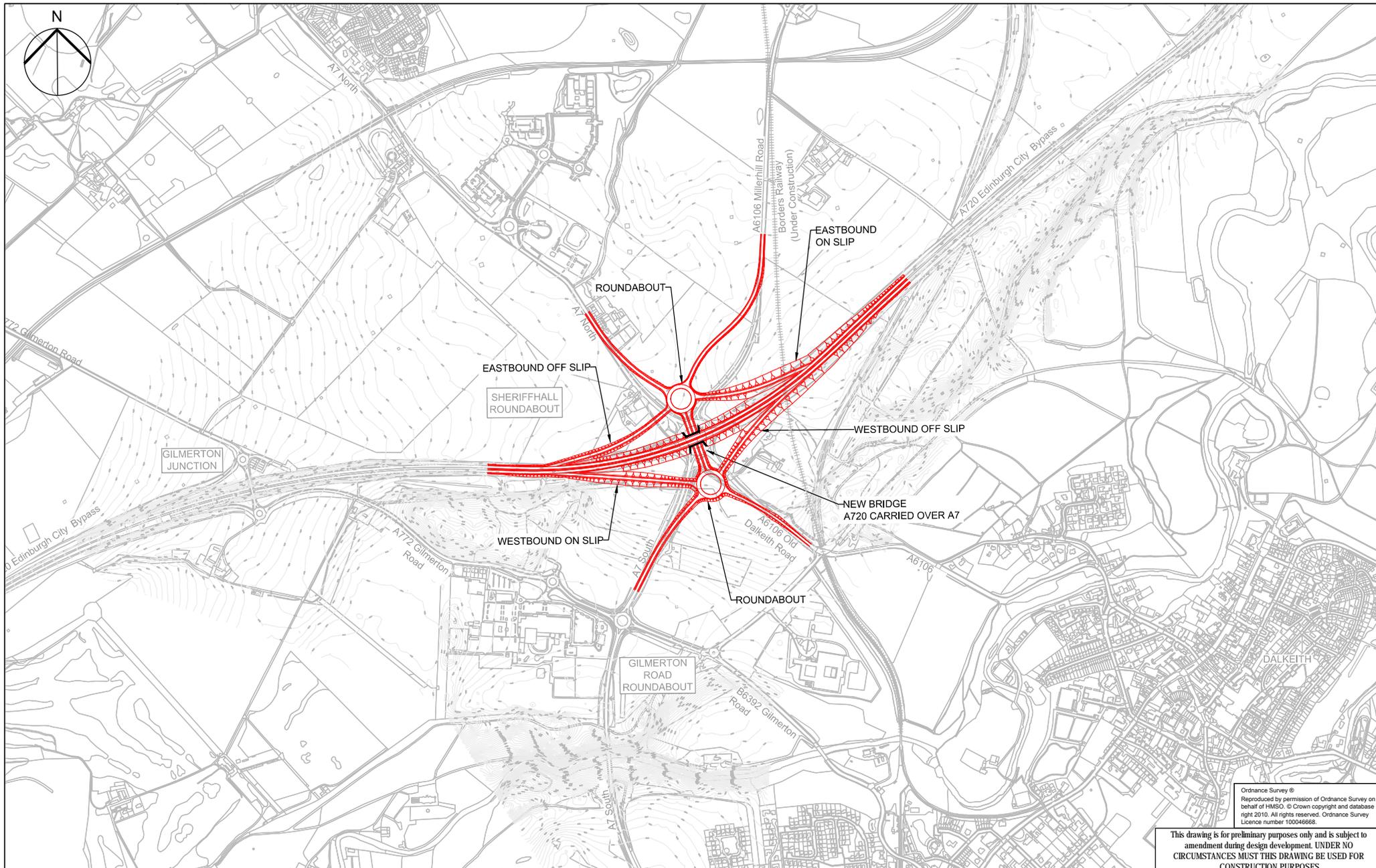
Initial appraisal shows that Option 3 has no great advantage over Option 2 but has a greater number of roundabouts therefore it is concluded that there is little value in taking it to Stage 2. Similarly, Option 7 is effectively the same as Option 1 but has less provision as it closes the existing Gilmerton slip roads. As a result it is concluded that Option 7 should not proceed to Stage 2.

Option 4 completely removes the direct access connection between the A720 and the A7/A6106, effectively replacing the existing junction with a collector distributor road between west facing slips at Gilmerton and east facing slips at Millerhill. Whilst this option reduces the current level of access to and from the A720, its main attraction would be the additional capacity it provides to the A720, effectively adding another lane in each direction. It is considered that the scope of this solution is beyond the targeted nature of the overarching scheme objective of grade separation at Sheriffhall and hence better considered as part of a wider A720 study. Within the timeframe of the current scheme, Option 4 is likely to generate a high level of opposition compared to other options and has a much larger footprint and high capital cost.

Option 5 has the same central elements as Option 1 but a greater capital cost, reduced connectivity between the A720 and A7/A6106 and an increased footprint. Therefore for similar reason to Option 4, it is concluded that Option 5 should not be taken forward to Stage 2.

Although having many of the issues associated with Options 4 and 5, Option 2 has a much lower capital cost and therefore is considered worthy of further assessment.

Therefore, it is recommended that Options 1, 2, 6 and 8 only are taken forward for further assessment at Stage 2.



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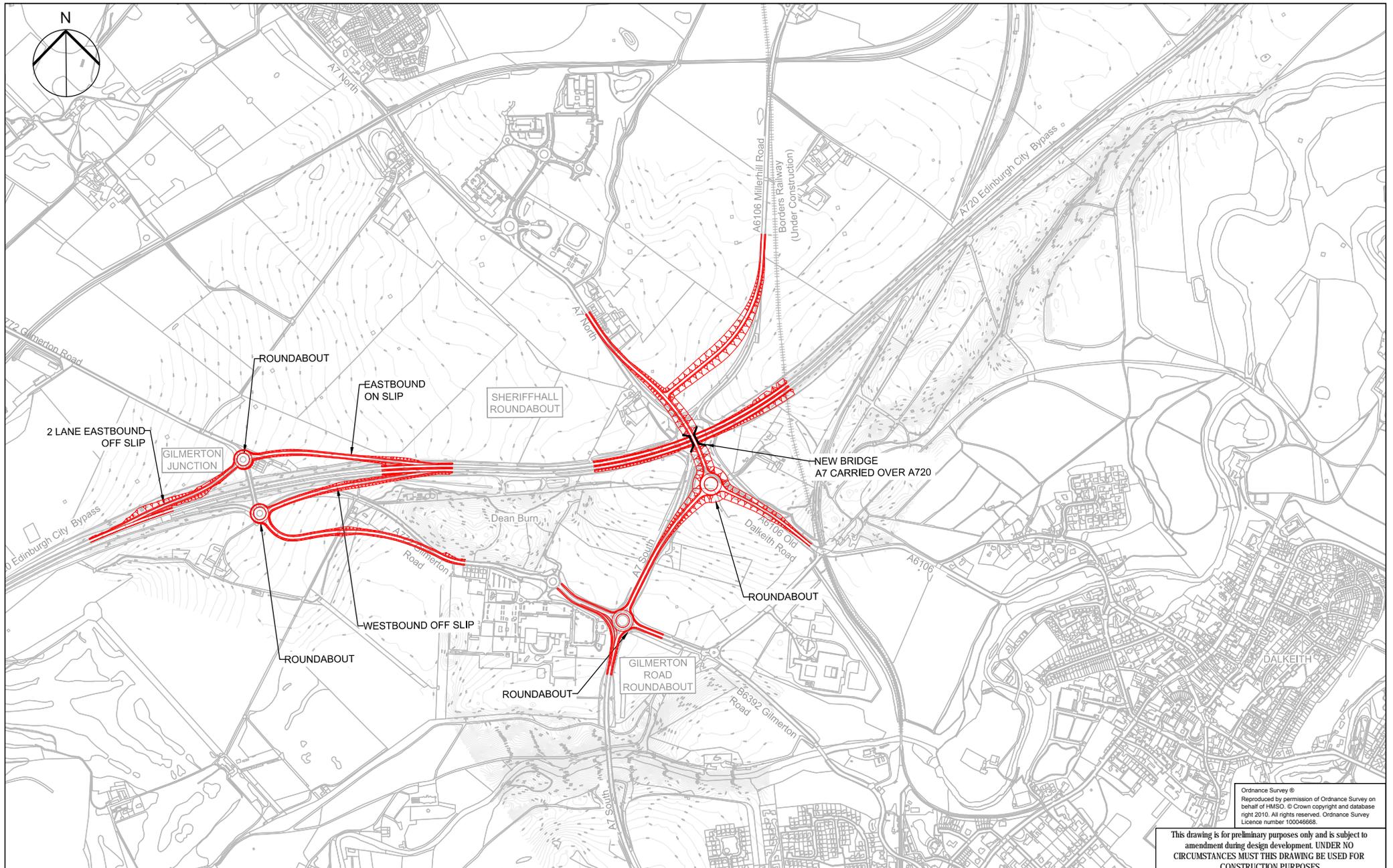
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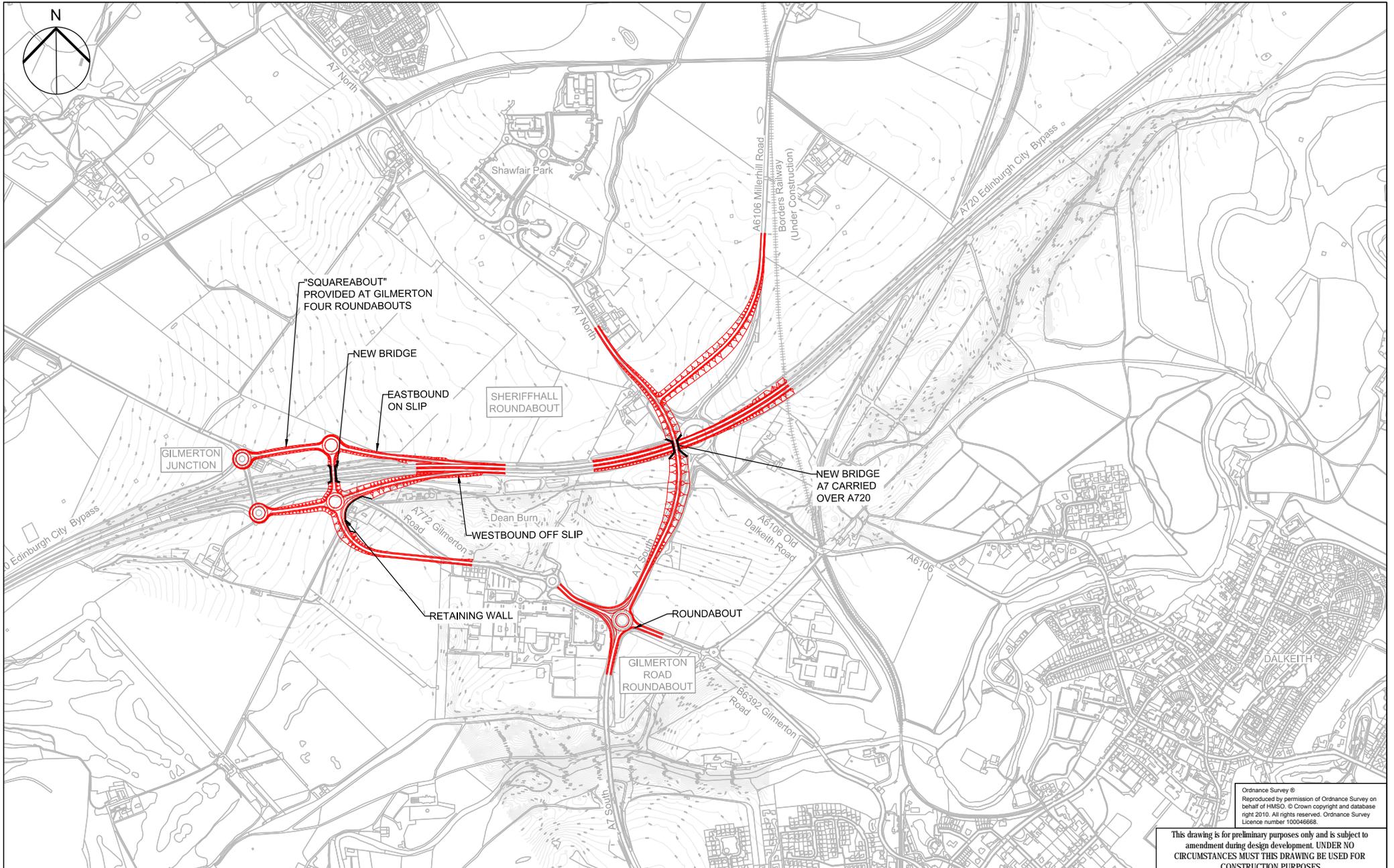
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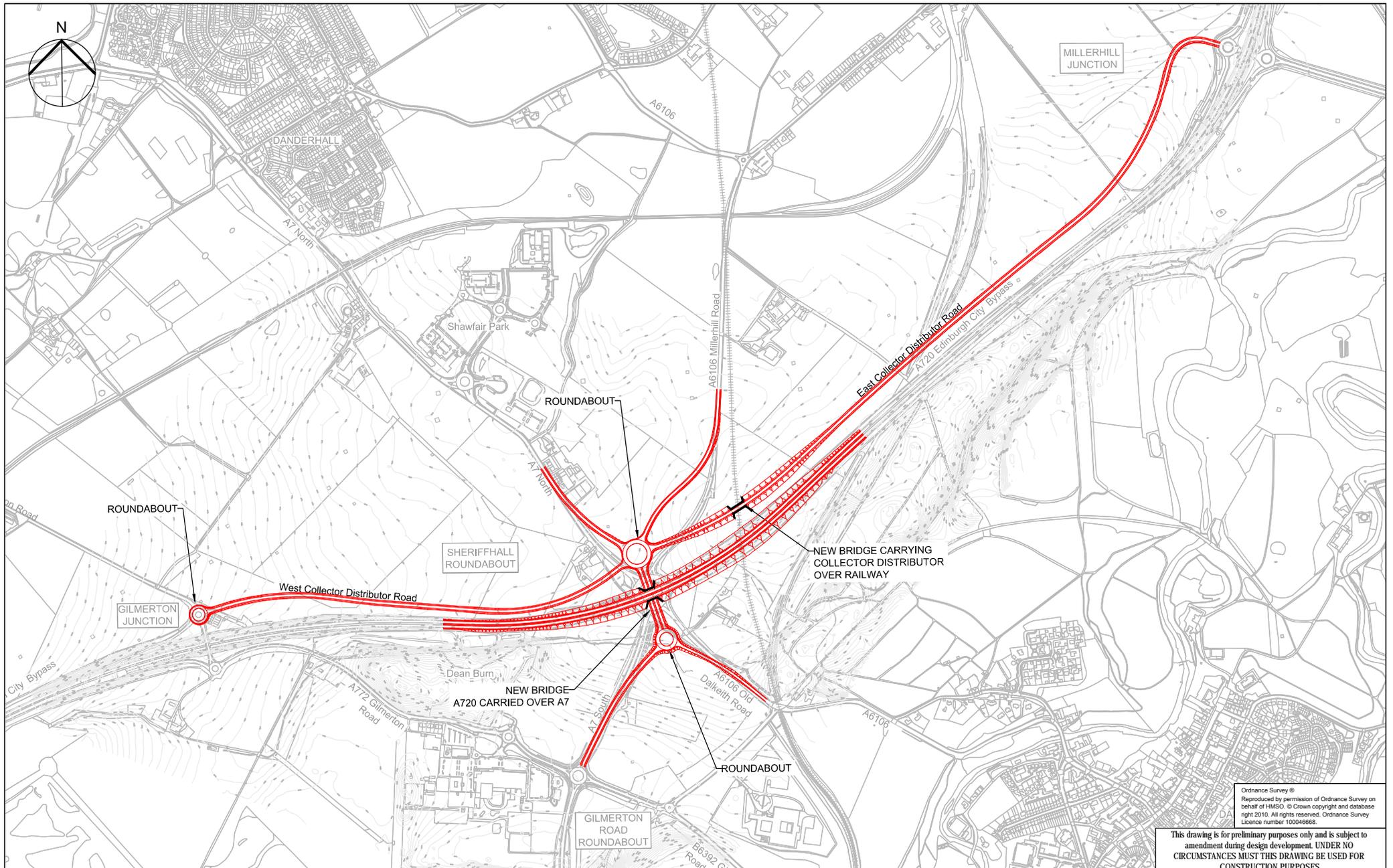
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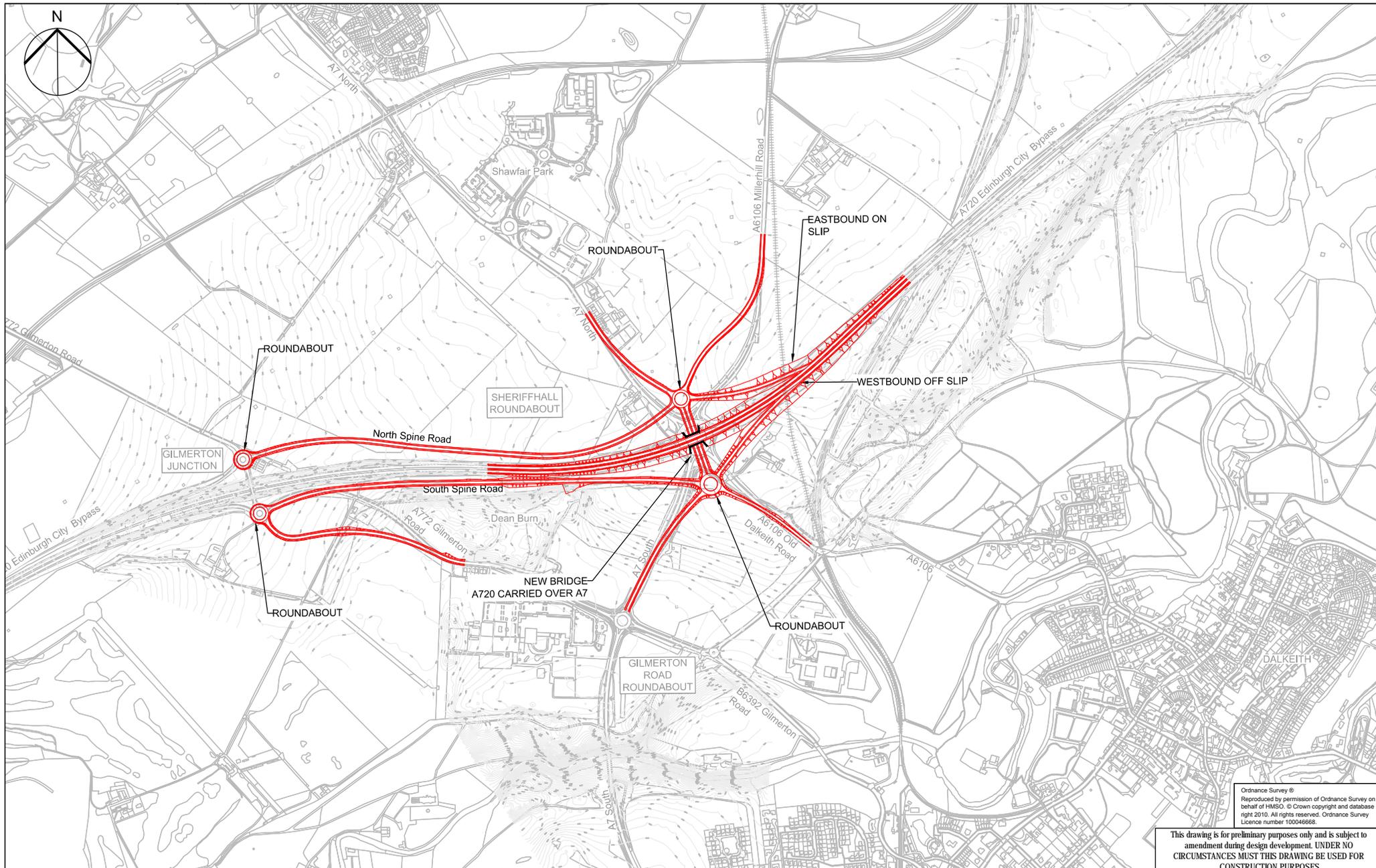
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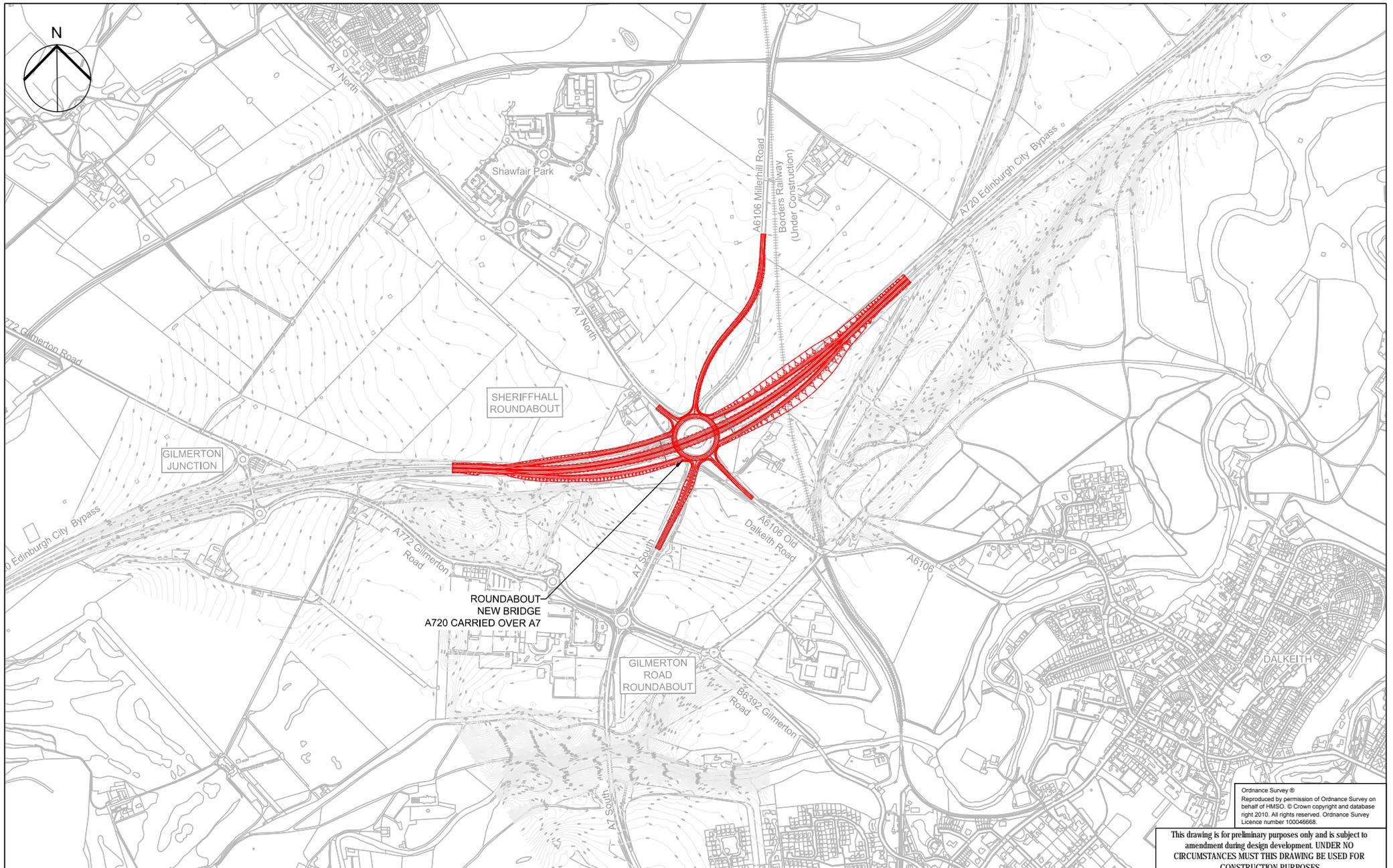
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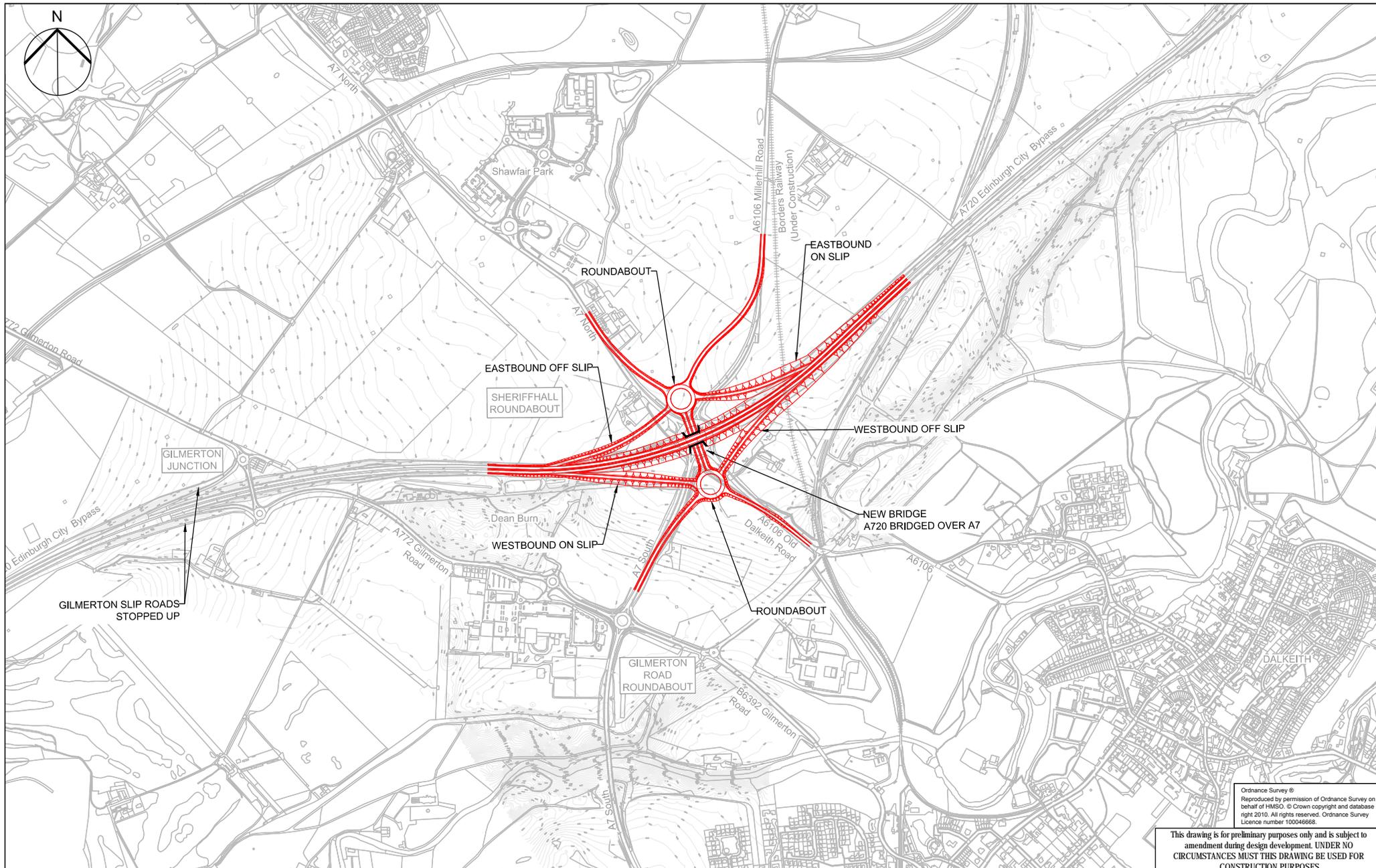
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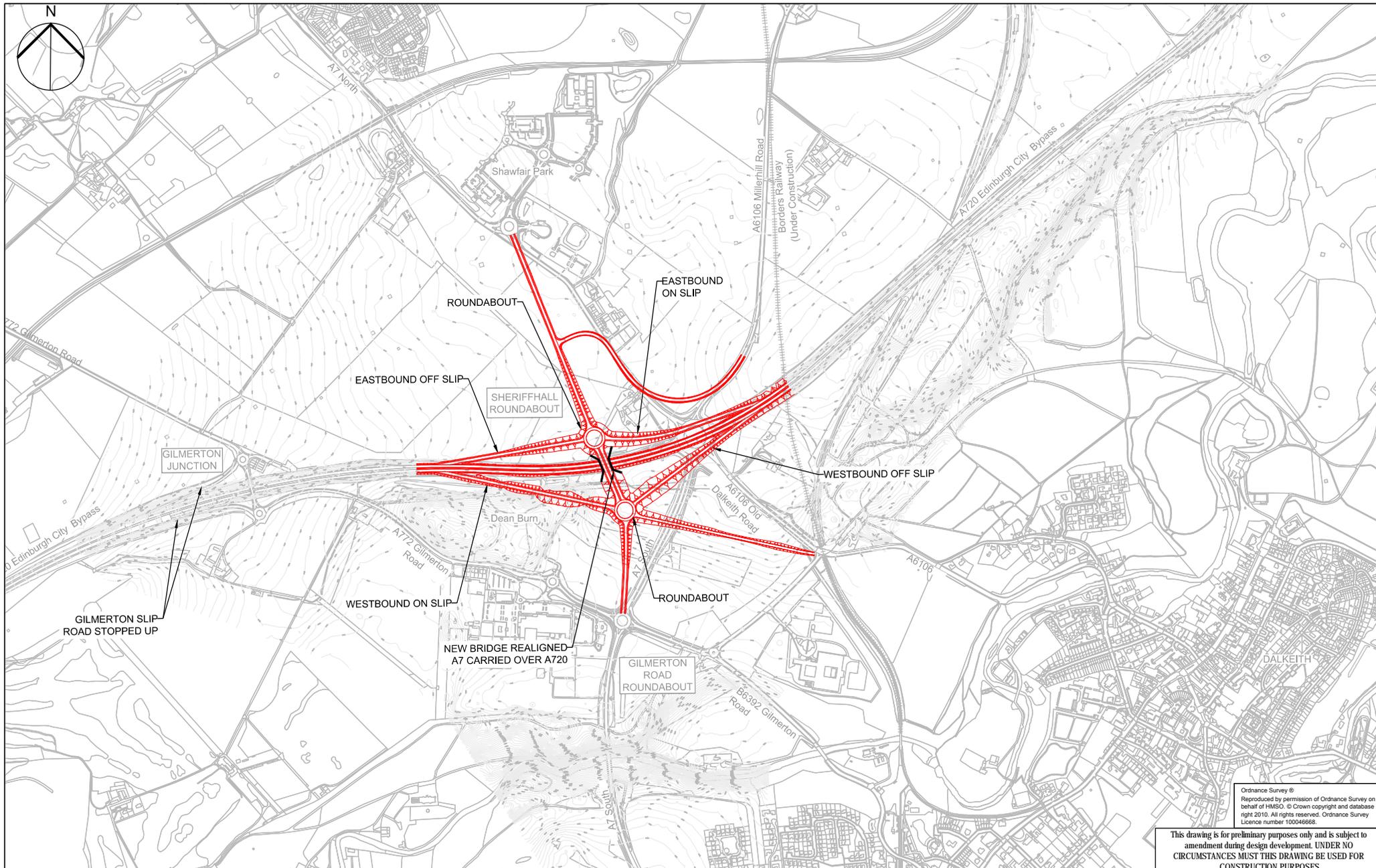
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