

**Department for Regional Development - TransportNI**

**YORK STREET INTERCHANGE**

**Public Inquiry**

**November 2015**

**Proof of Evidence:**

**Buildability**

**by**

**John Fraser**

John Fraser BSc CEng MICE  
Gareloch Consult Ltd.  
Lydenhill  
G84 8RY  
UK

THIS PAGE INTENTIONALLY BLANK

TABLE OF CONTENTS	TABLE OF CONTENTS .....	I
	1. INTRODUCTION.....	1
	1.1 Introduction .....	1
	1.2 Buildability Assessments.....	1
	2. OUTLINE CONSTRUCTION SEQUENCE .....	3
	2.1 Overview .....	3
	2.2 Phase 1 .....	4
	2.3 Phase 2 .....	4
	2.4 Phase 3 .....	6
	2.5 Phase 4 .....	7
	2.6 Phase 5 .....	8
	2.7 Phase 6 .....	8
	2.8 Phase 7 .....	9
	2.9 Phase 8 .....	9
	2.10 Phase 9 .....	10
	2.11 Phase 10 .....	11
	2.12 Phase 11 .....	12
	2.13 Phase 12 .....	12
	2.14 Phase 13 .....	13
	2.15 Temporary Speed Limits .....	14
	2.16 Existing Car Parking Facilities .....	14
	2.17 Construction Programme .....	14
	3. SUMMARY FINDINGS FROM COMPLETED BUILDABILITY ASSESSMENTS .....	15
	3.1 Services .....	15
	3.2 Traffic Management .....	15
	3.3 Ground Conditions .....	16
	3.4 Stability of Existing Structures .....	17
	3.5 Design .....	17
	3.6 Public Relations .....	17
	4. CONCLUSIONS.....	19
	APPENDIX A TEMPORARY TRAFFIC MANAGEMENT DRAWINGS	

THIS PAGE INTENTIONALLY BLANK

**1. INTRODUCTION****1.1 Introduction**

1.1.1.1 My name is John Fraser and I am the Managing Director of Gareloch Consult Ltd, engaged by URS as a buildability advisor to the project team.

1.1.1.2 URS, now part of AECOM, is one of the world's leading engineering consultancy firms. For the purposes of this Proof of Evidence, references to URS include reference to its former legacy companies, including Scott Wilson.

1.1.1.3 I have suitable academic qualification with a Bachelor of Science (BSc) degree in Civil Engineering. I am a Chartered Engineer and a Member of the Institution of Civil Engineers (ICE).

1.1.1.4 My career to date with various civil engineering contractors has provided me with significant experience in the construction of major civil infrastructure projects. I have been involved in submission of several design and build tenders both for Transport Scotland and Highways England. My role involved assessment of bid teams tender make ups for cost, risk, and practicality of construction.

1.1.1.5 I have served as the Civil Engineering Contractors Association (CECA) Scotland chairman and CECA National chairman, as well as the ICE West of Scotland and ICE Scotland committees.

1.1.1.6 I currently serve as a non-executive director on the project board of the new £1.4bn Forth Replacement Crossing for Transport Scotland.

**1.2 Buildability Assessments**

1.2.1.1 Since 2011, I have provided assistance to URS in the review of buildability aspects of the scheme as part of buildability assessment exercises carried out as part of the Design Manual for Roads and Bridges (DMRB) Stage 2 and Stage 3 Scheme Assessment processes.

1.2.1.2 Under the provisions of paragraphs 4.9 and 5.9 of the DMRB Standard TD 37/93, it is a requirement as part of both the Stage 2 and Stage 3 Scheme Assessment process to identify any potential engineering difficulties associated with the scheme.

1.2.1.3 The construction of the scheme within these constraints would present potential engineering difficulties that should be identified and assessed in line with this Standard.

- 1.2.1.4 URS's approach to complete specific buildability assessments of all options under consideration as part of the Stage 2 Scheme Assessment, with specific assessment of the Proposed Scheme during the subsequent Stage 3 Scheme Assessment, is therefore consistent with these requirements.
- 1.2.1.5 The scope of my appointment to URS has included the following tasks:
- the review of engineering drawings to identify potential 'show-stoppers';
  - the identification of key construction issues and possible mitigation measures;
  - the review of temporary traffic management phasing drawings;
  - the development of feasible construction programmes;
  - the identification of value engineering opportunities;
  - the identification of key residual risks with regard to construction; and
  - assisting the project team to summarise the overall assessment findings.
- 1.2.1.6 The respective buildability assessments at Stage 2 and Stage 3 have been informed by information packs compiled by URS that have included all relevant engineering drawings, including drawings illustrating the proposed construction sequence and temporary traffic management layouts. Supplementary background information on ground conditions has also been made available based on historical and recently completed ground investigations.
- 1.2.1.7 The buildability assessments have taken the form of a series of workshops with representatives from each of the engineering disciplines within the URS project team. At the workshops, the URS project team has presented a "most-likely" construction sequence for the scheme, along with associated major temporary traffic management layout drawings.
- 1.2.1.8 It has been acknowledged that the phasing of the works involves a complicated series of activities which run in conjunction and in sequence where the failure to adequately manage and coordinate interdependent activities could create serious consequences for the overall project.

- 1.2.1.9 Due to the complexity of the scheme, there are likely to be a number of unforeseeable hazards and risks that may only materialise as a detailed design is developed. Such hazards and risks will be assessed as and when they are identified.
- 1.2.1.10 For the buildability assessments carried out at Stage 2 and Stage 3, the design of the scheme was reasonably well advanced and adequate to assess the buildability of the works.
- 1.2.1.11 Feedback has been provided as required to refine the envisaged construction sequence and associated traffic management phasing to ensure that the programming and phasing of the works are achievable. As part of the feedback, based on professional judgement and experience, estimated durations for each temporary traffic management phase has been identified. This ultimately develops an overall construction programme for the works.
- 1.2.1.12 The refined outline construction sequence and associated traffic management layouts, along with the overall construction programme are described in Chapter 2 of this Proof of Evidence.
- 1.2.1.13 The major factors affecting the Proposed Scheme's construction are:
- services;
  - traffic management;
  - ground conditions;
  - stability of existing structures;
  - design; and
  - public relations.
- 1.2.1.14 These factors are more fully described in Chapter 3 of this Proof of Evidence.

THIS PAGE INTENTIONALLY BLANK

## 2. OUTLINE CONSTRUCTION SEQUENCE

### 2.1 Overview

2.1.1.1 To demonstrate that the Proposed Scheme could be built within its constraints whilst maintaining routes for traffic, an outline construction sequence was developed by URS as illustrated on Drawings YSI-URS-XX-XX-DR-RE-TM001 to TM013 inclusive in Appendix A.

2.1.1.2 For the purposes of identification, all road links have been assigned a unique reference number as illustrated on Drawings YSI-URS-XX-XX-DR-RE-IM000 and YSI-URS-XX-XX-DR-RE-IM001 included in Appendix A.

2.1.1.3 Similarly, all the various structures within the Proposed Scheme have been assigned a unique reference number as illustrated on Drawing YSI-URS-XX-XX-DR-SE-00001 in Appendix A.

2.1.1.4 In developing the construction sequence, cognisance was taken of the potential for works to strengthen the Dargan Bridge foundations (to facilitate any future dualling scheme) to be undertaken as part of the construction contract. The sequence did not, however, consider the works to the superstructure to replace or otherwise widen the existing deck.

2.1.1.5 The priority of works elements that informed the developed outline construction sequence is outlined below:

- the completion of site clearance works;
- the completion of service diversions;
- the construction of section of M2 to the Westlink underpass (BR-003) under Lagan Bridge including prior foundation strengthening works (FS-001);
- the construction of new bridges at York Street (BR-002A and BR-002B) and approaches;
- the construction of the Westlink to M2 and M3 underpasses (UP-002A and UP-002B);
- the construction of remainder of M2 to the Westlink underpass (UP-001A);
- the construction of M3 to the Westlink underpass (UP-001B); and
- the construction of Dock Street to M3 link (Link No. 6) and completion of pumped drainage outfall route.

- 2.1.1.6 Once site clearance works are complete, all proposed major service diversion works would be carried out as the highest priority element of work, to allow subsequent works to be completed in cleared areas of the site.
- 2.1.1.7 Once the service diversions are completed, works to complete the section of UP-001A under the Lagan and Dargan Bridges, including prior foundation strengthening works would be prioritised as they will be complex and slow to progress with specialist plant, therefore presenting the biggest risks to overall duration.
- 2.1.1.8 Before the various underpasses can be constructed, it would be necessary to grade separate traffic flows through the works area. Accordingly, the completion of the York Street Bridges (BR-001 and BR-002) would be considered the next priority element in the programme.
- 2.1.1.9 With the bridge completed, traffic flows would be sufficiently separated to permit works to construct the underlying underpasses. Until such time as the underpasses were complete, however, the completed bridges (and approach embankments) at York Street would form key three-dimensional constraints to temporary traffic management arrangements.
- 2.1.1.10 The respective phases within the outline construction sequence are described in the following sections 2.2 to 2.14 of this Proof of Evidence.

## **2.2 Phase 1**

- 2.2.1.1 Phase 1 is illustrated on Drawing YSI-URS-XX-XX-DR-RE-TM001 in Appendix A.
- 2.2.1.2 The first phase of the proposed construction sequence would involve site clearance, including the completion of any demolition works to existing buildings. These works would be undertaken using lane and hard shoulder closures on the existing routes as required. It should be noted that in order to provide access and egress to site clearance works on the Westlink, it would be proposed to close the north facing Clifton Street on and off slips.
- 2.2.1.3 It is expected that these works would require a minimum of 5 weeks to complete.

## **2.3 Phase 2**

- 2.3.1.1 Phase 2 is illustrated on Drawing YSI-URS-XX-XX-DR-RE-TM002 in Appendix A.
- 2.3.1.2 The next phase of the proposed construction sequence would be the diversion of services in advance of the construction of the new bridge, underpass and wall structures.

- 2.3.1.3 In order to construct Service Route A to the west of the proposed York Street Bridges (BR-001A and BR-002B), including the construction of culverts CU-003 and CU004, it would be proposed to temporarily realign the Westlink approach to York Street, to a position adjacent to the southbound Westlink carriageway. York Street would also be temporarily realigned between York Link and Cityside Retail Park to facilitate the works. In order to construct CU-004, it would also be necessary to close Great Georges Street from York Street to Portland Place, with an alternative route for affected residents via temporary conversion of the remaining section to two-way running, with minor enabling works at the junction with North Queen Street. Works to complete the crossing of York Street for culvert CU-004 would be undertaken using full weekend closures of the junction with Great Georges Street. In order to finalise connections to the relocated NIE substation at Galway House, it would be proposed to close access to the M2 via the existing southbound lane on York Street. The proposed traffic management arrangements would also provide the opportunity to construct the new retaining wall RW-007 at Molyneaux Street/Henry Street.
- 2.3.1.4 In order to construct Service Route E on Great Georges Street, including the construction of culvert CU-002, it would be necessary to realign Great Georges Street north of its current position. However, in order to complete all service crossings at Nelson Street, it would also be necessary to close the junction for a weekend.
- 2.3.1.5 Service Route F can be largely constructed from an offline position, however, a number of crossings are required that will require weekend closures of the connection of the on-slip from Nelson Street to the M3, with associated closures on approaches from the Westlink and York Link. Similarly, works to complete crossings at Dock Street would require lane closures and/or a full closure of the junction.
- 2.3.1.6 Importantly, the proposed service diversions include works to relocate 110kV NIE power cables at Whitla Street subway, as part of Service Route G. The nature of these service diversion works would require the complete closure of the northern section of Nelson Street (between Dock Street and Duncrue Street); with the proposed re-routing of northbound traffic from Dock Street via a temporary two-way arrangement on Garmoyle Street and Whitla Street. Enabling works would be required to install the arrangement, with an associated loss of southbound capacity on the route from the M2 to city centre.
- 2.3.1.7 The proposed closure of Nelson Street between Dock Street and Duncrue Street would provide the opportunity to construct other elements of the future M2 to Westlink (Link No. 2) and Duncrue Street to Westlink (Link No. 31) routes, including retaining walls RW-024 and

RW-029, the extension to BR-006 and the northern abutment for BR-004. Works at Whitla Street would require the closure of the existing subway, with re-routing via Dock Street.

- 2.3.1.8 Elsewhere within the site, the proposed traffic management arrangements would provide the opportunity to commence the installation of a number of the underpass and pumping station retaining walls, once adjacent service diversions are complete. These would be typically constructed up to below ground level and covered over as required to facilitate future traffic management scenarios.
- 2.3.1.9 The construction of the pumped outfall route from the Proposed Scheme to the existing Gamble Street combined sewer outfall comprise off-line works would be commenced in parallel with these works, again in recognition of the potential for encountering unforeseen obstructions to the thrust boring operation.
- 2.3.1.10 It is expected that these works would require a minimum of 27 weeks to complete.
- 2.3.1.11 It is understood that TransportNI intends to construct one of the identified shafts required along the outfall route in advance of the Proposed Scheme. This is considered prudent as the advance completion of these works would avoid future physical restrictions on the site that would otherwise be imposed by a planned development by Belfast Harbour Commissioners in adjacent lands scheduled to commence construction in Spring 2016.
- 2.4 Phase 3**
- 2.4.1.1 Phase 3 is illustrated on Drawing YSI-URS-XX-XX-DR-RE-TM003 in Appendix A.
- 2.4.1.2 The next phase of the construction sequence is the completion of the section of M2 to Westlink underpass (UP-001A) underneath the Lagan Bridge and Dargan Bridge.
- 2.4.1.3 In order to provide sufficient working space for these works, it is proposed to temporarily realign the movement from M2 to the Westlink into lands at Corporation Street, with an accompanying realignment of the movement from the Westlink to M3 to the next "gap" south in the Lagan and Dargan Bridge pier positions, at Shipbuoy Street.
- 2.4.1.4 York Street and the Westlink would remain in their revised positions from Phase 2, with works commencing on the northern side of the Westlink to construct retaining wall RW-001 and the widening of North Queen Street bridge (BR-001). In addition, works to construct the proposed reinforced slope EB-001 to the rear of properties at Little Georges Street would also be undertaken. This would include any enabling works to excavate and remove part of the existing Westlink embankment to provide a piling platform for the works.

- 2.4.1.5 In order to construct retaining wall RW-020, it would be proposed to reduce the York Street on-slip to the M2 to two lanes, with the completion of the wall allowing works to construct the new slip road from York Street to M2 (Link No. 15) to proceed, along with works to widen the existing Dock Street bridge to the west (BR-005).
- 2.4.1.6 At Dock Street, the new element of work would be the construction of the central bridge piers for the new overbridge (BR-004). This would require the realignment of lanes at the Dock Street/Nelson Street junction and the continued closure of the northern section of Nelson Street between Dock Street and Duncrue Street, with substitute two-way arrangement on Whitla Street and Garmoyle Street. In conjunction with this closure, it would be necessary to close the southern section of Nelson Street between Dock Street and York Link to facilitate the construction of the new bridge piers and traffic islands. The connection between Dock Street and York Link would be provided via a substitute temporary arrangement from Corporation Street, which would require the temporary closure of the northbound bus lane from Clarendon Dock to Dock Street. Once the piers are in place, works would progress to form the remainder of the bridge, with the northern span first constructed, then followed by the southern and central spans. Works to construct the central spans would be carried out over the live underlying carriageway, with bridge beams craned into position using overnight or weekend closures of the junction.
- 2.4.1.7 Over the course of discussions with URS, it was noted that the use of temporary end walls would provide an opportunity to proceed with the construction of the various underpasses in isolated section. Based on this, it would be proposed to commence construction on an isolated section of the M2 to Westlink underpass (UP-001A) in an offline position at lands beside Corporation Street.
- 2.4.1.8 It is expected that these works would require a minimum of 27 weeks to complete.

## **2.5 Phase 4**

- 2.5.1.1 Phase 4 is illustrated on Drawing YSI-URS-XX-XX-DR-RE-TM004 in Appendix A.
- 2.5.1.2 The next phase of the construction sequence is the commencement of works to construct the two new bridges at York Street (BR-002A and BR-002B) and associated embankments. On this basis, the next phase of temporary traffic management would involve the realignment of York Street east of its current position. The resulting space would be used to construct the southern abutment and piers to bridge BR-002A. The northern abutment to BR-002A would not be constructed at this time, with the Westlink to York Street alignment realigned to run

over the location of the future abutment, thereby allowing construction of the new retaining walls RW-031 and RW-033. At the same time, the piers and abutments for bridge BR-002B would be constructed, along with some isolated sections of retaining walls.

2.5.1.3 Following the completion of widening works to the Westlink in the previous phase, the next phase of work at North Queen Street Bridge (BR-001) would involve the realignment of traffic to the northern extents of the widened carriageway, providing space for works to widen the southern part of the bridge to commence. At the same time, works to construct RW-002 and the reinforced slope to the existing Great Georges Street retaining wall (EB-002) would also be progressed, requiring the temporary excavation of part of the existing Westlink embankment to form a piling platform.

2.5.1.4 At Dock Street, with the construction of bridge BR-004 and the completion of works to widen the existing Dock Street bridge (BR-005), works would involve the construction of the new junction layout at Dock Street using overnight or weekend closures as appropriate. When the new junction arrangement and northern section of Nelson Street (Link No. 29) is substantially completed, the temporary two-way arrangement on Garmoyle Street and Whittla Street would be removed.

2.5.1.5 It is expected that these works would require a minimum of 13 weeks to complete.

## **2.6 Phase 5**

2.6.1.1 Phase 5 is illustrated on Drawing YSI-URS-XX-XX-DR-RE-TM005 in Appendix A.

2.6.1.2 Following the construction of the southern bridge at York Street (BR-002A), works would progress to start construction of the southern approach embankment (EB-003) using piled load transfer slabs. The southern embankment would be completed in two "halves", with a south-west portion of the embankment initially constructed. To provide sufficient working space, it would be necessary to realign York Street into lands north of Philip House. It is this requirement for the construction of the embankment which has provided the basis for the inclusion of affected lands within the vesting outline and therefore, the need to demolish the existing single-storey buildings to the north of Philip House.

2.6.1.3 It is expected that these works would require a minimum of 5 weeks to complete.

## **2.7 Phase 6**

2.7.1.1 Phase 6 is illustrated on Drawing YSI-URS-XX-XX-DR-RE-TM006 in Appendix A.

- 2.7.1.2 With works to construct the south-west portion of embankment EB-003 completed, the temporary traffic management layout on York Street would be switched to realign lanes into the existing car park at Great Georges Street (Lancaster Street). This arrangement would provide the necessary working space to construct the south-east portion of the embankment using similar techniques, subject to an initial reduction in the number of lanes on York Street to three, opening to four lanes in due course. The reduction to three lanes would require associated lane closures on Great Patrick Street. It should be noted that, under the proposed arrangements, the distance between the two major temporary signalised junctions on York Street would be shortened and this may lead to potential operation issues.
- 2.7.1.3 The proposed traffic management arrangements would also provide the opportunity to commence works associated with the connection of the new interchange link from the Westlink to M2 (Link No. 1) to the existing M2 country-bound carriageway.
- 2.7.1.4 Works would also be commenced at this time to alter the existing off-slip from the M3 to Nelson Street, with realignment of lanes on the off-slip as appropriate.
- 2.7.1.5 It is expected that these works would require a minimum of 5 weeks to complete.

## **2.8 Phase 7**

- 2.8.1.1 Phase 7 is illustrated on Drawing YSI-URS-XX-XX-DR-RE-TM007 in Appendix A.
- 2.8.1.2 With works to construct the southern embankment to the York Street bridges BR-002A and BR-002B completed, works would then commence on the construction of the northern embankment EB-005. With retaining wall RW-007 in place, works would entail the similar construction of piled load transfer platforms and the placement of imported fill to form the embankment structure. To support the placed fill, above ground elements of the Westlink to M2 underpass retaining walls would need to be constructed where possible. In order to maintain connection to York Street and the M2 during these works, it would be necessary to realign York Street to the east of the proposed bridge structures, with a temporary retaining solution required to support the construction of the northern embankment.
- 2.8.1.3 Based on the developed construction programme, it is expected that these works would require a minimum of 5 weeks to complete.

## **2.9 Phase 8**

- 2.9.1.1 Phase 8 is illustrated on Drawing YSI-URS-XX-XX-DR-RE-TM008 in Appendix A.

- 2.9.1.2 To complete the remainder of the northern embankment (EB-005) at York Street, traffic on York Street would be effectively split at the junction with Great Georges Street around the site of the future York Street bridges and new retaining walls. Two lanes would continue around the western side of the new bridges and retaining walls to provide connection to York Road, whilst a further two lanes, would provide connection from York Street to the M2. Changes would also be made to the layout of the major temporary signalised junctions on York Street, with an additional two junctions being required to facilitate the proposed realignment of York Street and the Westlink.
- 2.9.1.3 It should be noted that the proximity of several major temporary junctions, and the anticipated traffic flows, is likely to present operation problems for the junctions for the duration of this phase of traffic management.
- 2.9.1.4 In order to complete the section of the embankment, works would also include the construction of the final above ground section of the Westlink to M2 underpass (UP-002A) retaining wall, limiting the number of lanes joining the M2 from York Street to two.
- 2.9.1.5 Once the remainder of the embankment is in place, works would also include the completion of the new York Street to M2 slip road (Link No. 15) as necessary to complement the new embankment levels.
- 2.9.1.6 The proposed traffic management layout would also provide space for the completion of works to construct the new vertical concrete step barrier in the central reserve of the Westlink (VCSB-001). The works are facilitated by the prior widening of North Queen Street bridge, with lanes realigned to the northern and southern extents of the widened structure accordingly. In light of the temporary realignment of the lanes, it is proposed to close the north facing on and off slips at Clifton Street for the duration of these works.
- 2.9.1.7 I would expect that these works would require a minimum of 5 weeks to complete.

## **2.10 Phase 9**

- 2.10.1.1 Phase 9 is illustrated on Drawing YSI-URS-XX-XX-DR-RE-TM009 in Appendix A.
- 2.10.1.2 With the embankments to the north (EB-005) and south (EB-003) of the proposed bridges at York Street completed, works would then commence to construct the remainder of the bridges and the infill section of embankment (EB-004) between the bridges, supported by retaining walls RW-032 and RW-034.

- 2.10.1.3 At this time, York Street would again be realigned to a new temporary position east of the future bridges; however, with the completion of the EB-003 and EB-005, the route will require vertical realignment as necessary between the embankments.
- 2.10.1.4 At this time, the movement from Westlink to the M2 would be realigned to the new off-slip from Westlink to York Street, with a temporary signalised junction proposed to provide onward connection to the new slip road from York Street to the M2. In conjunction with these works, the new signalised junction at Cityside Retail Park and Galway House would be constructed, along with works to narrow the eastern footway of York Street between Galway House and Dock Street.
- 2.10.1.5 I would expect that these works would require a minimum of 11 weeks to complete.

## **2.11 Phase 10**

- 2.11.1.1 Phase 10 is illustrated on Drawing YSI-URS-XX-XX-DR-RE-TM010 in Appendix A.
- 2.11.1.2 With the new bridges BR-002A and BR-002B at York Street completed, traffic would be relocated to run over the new structure, with movements from to and from the Westlink facilitated by temporary junctions at the northern and southern extents of the bridges, with temporary realignment of lanes as appropriate. The new retaining wall RW-028 at the Great Georges Street car park would be constructed at this time. At Cityside Retail Park, the construction of the new signalised junction arrangements on York Street would continue, along with the construction of other traffic islands included within the permanent works.
- 2.11.1.3 The grade separation provided by the new bridges would then allow works to commence on the excavation and construction of the new underpass structures, principally structures UP-001A, UP-002A and UP-002B. The construction of underpasses UP-002A and UP-002B would be a higher priority than the remainder of UP-001A, so that the works to complete the retaining walls between UP-002A and UP-001A can be completed in the next traffic management phase.
- 2.11.1.4 At this time, works would be undertaken on the southern section of Nelson Street and at the junction of Great Patrick Street and Dunbar Link to construct the new junction arrangement. Works required to reduce carriageway width on Nelson Street between Great Georges Street and Great Patrick Street would also be undertaken at this time.
- 2.11.1.5 I would expect that these works would require a minimum of 16 weeks to complete.

**2.12 Phase 11**

- 2.12.1.1 Phase 11 is illustrated on Drawing YSI-URS-XX-XX-DR-RE-TM011 in Appendix A.
- 2.12.1.2 Once the new underpasses from the Westlink to M2 and M3 (UP-002A and UP-002B respectively) are completed, the traffic management layout would switch to that shown as Phase 11. It should be noted that, under this phase, two lanes would be provided for the movement from the Westlink to M3, subject to signal control at a temporary signalised junction with Nelson Street.
- 2.12.1.3 The removal of M2 and M3 bound traffic from the junction to the north of bridge BR-002B would permit the completion of the final junction arrangement for the Westlink to York Street slip road. On the southern section of York Street, works would be commenced to construct the traffic islands at the junctions with Little Patrick Street and Great Patrick Street, requiring the reduction in the number of lanes to three, opening to four where possible. Lane closures would also be required on Great Patrick Street to facilitate these works.
- 2.12.1.4 The construction of the M2 to Westlink underpass (UP-001A) would continue under this phase, including the construction of the proposed pumping station. During this phase, works would also commence on the construction of the adjoining M3 to Westlink underpass (UP-001B) and the final tie-in between the two underpasses to the west of bridge BR-002A.
- 2.12.1.5 The opportunity would also be taken at this time to commence the construction of the left-in, left-out arrangement on the M3 to York Street slip road using lane closures as required on the southern section of Nelson Street.
- 2.12.1.6 It is expected that these works would require a minimum of 12 weeks to complete.

**2.13 Phase 12**

- 2.13.1.1 Phase 12 is illustrated on Drawing YSI-URS-XX-XX-DR-RE-TM012 in Appendix A.
- 2.13.1.2 With the M2 to the Westlink underpass UP-001A complete, the new bridge at Dock Street (BR-004) would be opened to allow traffic to use the new underpass. At this time, works would then focus on the completion of the M3 to the Westlink underpass UP-001B, with the final section at the Dargan Bridge to be completed. In the meantime, Westlink bound traffic from the M3 would continue through a temporary junction to the south of York Street Bridge BR-002A, with an additional temporary signalised junction arrangement where traffic flows meet with those joining the Westlink from the M2 in underpass UP-001A.

- 2.13.1.3 With the opening of the new bridge at Dock Street, the opportunity would be taken to construct the new slip road arrangement from Dock Street to the M3 (Link No. 6) which would require the removal of the disused Nelson Street off-slip from the M2 and the closure of access to Nelson Street from Dock Street. Works would include the construction of associated flood walls RW-025 and RW-026.
- 2.13.1.4 The construction of RW-026 would be completed from the M3 on-slip, with temporary excavation of the existing M3 on-slip embankment to form a suitable working platform for its construction. The temporary works required would require the reduction in lanes on the Westlink to M3 slip road to a single lane, albeit without signal control due to the removal of conflicting flows on Nelson Street. It should be noted that this temporary arrangement would be reflective of the final layout.
- 2.13.1.5 In parallel with these works, the opportunity would be taken to complete the construction of the pumped drainage outfall route and associated shafts, with the pumping station and associated access road under Corporation Street completed.
- 2.13.1.6 Temporary traffic management would also be required on the southern section of York Street to continue with the construction of the final traffic islands and junction layout with the M3 off-slip (Link No. 7) requiring lane closures in turn on Great Patrick Street.
- 2.13.1.7 It is expected that these works would require a minimum of 8 weeks to complete.

## **2.14 Phase 13**

- 2.14.1.1 Phase 13 is illustrated on Drawing YSI-URS-XX-XX-DR-RE-TM013 in Appendix A.
- 2.14.1.2 At this stage, the majority of the permanent works elements would be completed, with the exception of the M3 to York Street off-slip (Link No. 7). Once the M3 to Westlink underpass (UP-001B) is completed, the underpass will open and provide a new grade separated connection to the Westlink in a free-flow manner. This would then create the opportunity to construct the final off-slip arrangement from the M3 to York Street and complete associated embankment works to the west of York Street bridge BR-002A.
- 2.14.1.3 With the construction of retaining wall RW-026 and the new slip road from Dock Street to the M3 (Link No. 6) complete, the lanes would be realigned to their final layout, providing the opportunity to construct the flood wall RW-027.
- 2.14.1.4 Final works to finish the southern section of York Street would be completed during this phase, with associated closures on Great Patrick Street.

2.14.1.5 It is expected that these works would require a minimum of 6 weeks to complete, at which point all elements of the permanent works would be completed and the Proposed Scheme completed.

## **2.15 Temporary Speed Limits**

2.15.1.1 The proposed temporary speed limits, and location of terminal signs, are shown on Drawing YSI-URS-XX-XX-DR-RE-TM014 in Appendix A. As illustrated on the drawing, due to the layout of the proposed temporary traffic management arrangements and the proximity to several ongoing live work zones, URS expects a contractor to implement a blanket 30mph temporary speed limit throughout the works, complemented with a buffer 50mph zone on the M2 foreshore city-bound carriageway. The proposed 50mph buffer zone reflects the proposal, as part of the scheme, to introduce a permanent 50mph speed limit on the city-bound carriageway on approach to the interchange to moderate vehicle speeds.

2.15.1.2 It is understood that the proposed temporary speed limits on the M2 foreshore section will be subject to further review as part of detailed design development.

## **2.16 Existing Car Parking Facilities**

2.16.1.1 It should be noted that all public car parks affected by the works, i.e. the Northside Park & Ride car parks, the Great Georges Street (Lancaster Street) car park and the Corporation Street car park would be closed from the onset of the construction period.

## **2.17 Construction Programme**

2.17.1.1 It is anticipated that the Proposed Scheme would require a minimum period of just over 3 years (38 months) to complete, subject to the advance completion of service diversion works or advance placement of service diversion orders with the relevant utility providers.

2.17.1.2 In line with government policy, the proposed form of contract for any future contract would be the New Engineering Contract (NEC3). Under the provisions of this form of contract, the contractor and TransportNI are encouraged to manage risks and opportunities to the construction programme and construction cost in a partnering approach. Therefore, whilst opportunities may arise to enable early completion of the scheme, it must also be noted that, conversely, unforeseeable issues may arise during construction that may require the extension of the overall construction period.

### **3. SUMMARY FINDINGS FROM COMPLETED BUILDABILITY ASSESSMENTS**

#### **3.1 Services**

3.1.1.1 The Proposed Scheme will require the permanent and temporary diversion of several significant services owned and operated by various public utility companies. URS has highlighted the number and nature of the service diversions required for the construction of the Proposed Scheme and in turn, the considerable lead-in times required with the service providers. With regard to the major service diversions proposed, although the diversion proposals are considered to be feasible, concerns have been raised over the required lead-in times for the diversion of services for BT and Phoenix Natural Gas around UP-001A (9 months and 38 weeks respectively). Furthermore, the proposed diversion of oil-filled 110kV NIE power cables at Whitla Street subway (BR-006) would require a lead-in time of 1 year. These lead-in times would form a controlling factor in the early stages of construction and therefore, present a considerable risk to the overall construction programme if delayed.

3.1.1.2 A number of options have been presented to URS to mitigate the identified risk of associated delays. These options included the advance ordering of service diversions by Transport NI, or the completion of such works as an advance contract ahead of the main works contract. Both options have their respective advantages and disadvantages and it was agreed that both should be considered as part of the procurement strategy for the scheme going forward and indeed, be extended to consider options to enhance, or otherwise, incentivise the performance of affected utility providers.

#### **3.2 Traffic Management**

3.2.1.1 URS has presented an outline construction sequence for the Proposed Scheme based on its knowledge of the engineering challenges within the Proposed Scheme.

3.2.1.2 It is noted that whilst the construction sequence presented appears feasible, it will ultimately be a matter for the appointed contractor to decide in what order they would like to complete the works. This is common practice within the construction industry as the contractor is the party best placed to manage the associated logistics, plant and resourcing requirements within the other contractual requirements on lane availability through the works that will be imposed by TransportNI. It is expected that TransportNI will impose within the construction contract a requirement that the proposed underpinning works to the existing Lagan Bridge structure are completed before works to construct the new M2 to Westlink underpass (UP-001A).

- 3.2.1.3 Nonetheless, the construction phasing presented by URS appears a reasonable approach to how an appointed contractor would attempt to complete the works, taking into account the likely priority of works.
- 3.2.1.4 It is considered that URS' proposal for temporary traffic management has been based on a principle of maintaining all strategic movements between the Westlink, M2 and M3 and all northbound movements on York Street as a minimum. However, in seeking to maintain this level of provision, the completion of associated underpass piling works has been prolonged, due to the inability to create sufficient working space for the associated plant. This has therefore dictated the overall construction programme. URS have been advised that the potential use of secant piled walls should be considered to create opportunities to complete elements of the underpass piling works using overnight closures, albeit this opportunity may be limited given the proximity of associated residential housing and associated noise controls.
- 3.2.1.5 Based on available information on ground conditions, it is likely that the majority of arisings from the underpass excavations will require disposal to an off-site landfill facility. Having discussed the number and location of suitable landfill facilities within the area with URS, it is noted that the proposed temporary traffic management arrangements would have an impact on traffic patterns in the area which in turn would limit the speed at which excavated material could be disposed of. This would, in turn, dictate the rate of progress of underpass excavation and therefore the overall programme. Whilst the impact of such delays could be mitigated by the contractor through the provision of additional plant, it is considered that the number of additional tipping lorries required to minimise delays attending and leaving the site would be prohibitively expensive to the contractor.
- 3.2.1.6 Accordingly, it is suggested that a potential solution is the completion of such excavation works during off-peak or night-time periods, when traffic flows on adjacent routes would be lower. However, it is conceded that this may not be possible given the potential for disruption to adjacent properties and indeed, the availability of licensed disposal sites during off-peak or overnight periods.

### **3.3 Ground Conditions**

- 3.3.1.1 It is considered that the proposed underpass structures and construction techniques, using diaphragm walls, appear a feasible solution to the site constraints and ground conditions. As noted, the opportunities for the use where possible of secant piled walls should be considered, to maximise the rate of overall progress. A further recommendation was the use of temporary end-walls, to provide opportunities to complete the excavation of the underpasses in sections.

3.3.1.2 For the proposed embankments, it is considered that the proposed ground improvement measures appropriate and would encourage the use of light weight aggregate fill where possible.

### **3.4 Stability of Existing Structures**

3.4.1.1 The works in proximity to and works to, the existing Lagan Bridge and Dargan Bridge respectively were reviewed as part of the role of buildability advisor to URS. Although these works have been identified as elements that require careful monitoring of the existing structures, they are not, in principle, considered to be elements of work that could not be carried out by a suitably experienced contractor.

### **3.5 Design**

3.5.1.1 Whilst URS has developed the design of the Proposed Scheme to a relatively advanced level, it is noted that further detailed design work would be required. The lead-in times for the development and approval of a contractor's design, as part of a design and build procurement strategy are noted as having a potential for delays to the construction programme and so, it has been promoted the option for some elements of the works to be "Client Design" and therefore designed, detailed and approved ahead of the construction period.

3.5.1.2 It is understood that URS plans to consider this option as part of its future procurement strategy for the scheme.

### **3.6 Public Relations**

3.6.1.1 Given the nature of the Proposed Scheme and its urban setting, the importance of communications with road users and local communities is recognised. Whilst consultations with affected parties have been commenced in line with the overall Communications Plan for the Proposed Scheme, it is considered that other measures should be explored as part of a wider public relations exercise by TransportNI to develop wider options for traffic management and indeed, to provide regular updates to the public on the progress of the Proposed Scheme.

3.6.1.2 It is understood that URS and TransportNI have subsequently developed a Temporary Traffic Management Strategy Group to develop wider options for traffic management during the works. Through discussions with URS, it would appear that the measures being considered by the group will include:

- temporary park and ride facilities;
- extension of hard shoulder bus running to the M2 motorway city-bound carriageway;

- the extension of the existing M1 country-bound hard shoulder bus running from Saintfield junction (Junction 6) to the existing park and ride facility at Sprucefield (Junction 8);
- the extension of the existing park and ride facility at Black's Road;
- the provision of works variable message signs at a wider periphery to the Proposed Scheme to identify alternative routes;
- the promotion of the TransportNI "TravelWise" car sharing initiative;
- the provision of assistance to businesses to develop associated "green" transport plans;  
and
- the development of a communication system to relay information about the Proposed Scheme to specific road user groups and the wider general public.

**4. CONCLUSIONS**

- 4.1.1.1 TransportNI and URS have recognised the engineering challenges associated with the construction of the Proposed Scheme within the confines of the existing junction at key stages in the project's development.
- 4.1.1.2 The completion of buildability assessments during the Stage 2 and Stage 3 Scheme Assessment process has provided the team with the opportunity to identify these challenges and associated risk mitigation strategies.
- 4.1.1.3 The project's appointed buildability advisor has been involved at each of these buildability assessments to help the team identify these construction risks.
- 4.1.1.4 URS has been transparent in the information provided on its developed preliminary design, including associated limitations therein. It is considered that the level of development of the design is well advanced and suitable for the purposes intended.
- 4.1.1.5 The review of the proposals presented by URS has been based on professional judgement and experience in the construction industry.
- 4.1.1.6 Having reviewed the design of the scheme with the URS project team, it is understood that the team has identified key construction risks, with associated risk management strategies in place to deal with them.
- 4.1.1.7 In summary, these key construction risks are:
- service diversions;
  - traffic management;
  - ground conditions;
  - stability of existing structures;
  - design; and
  - public relations.

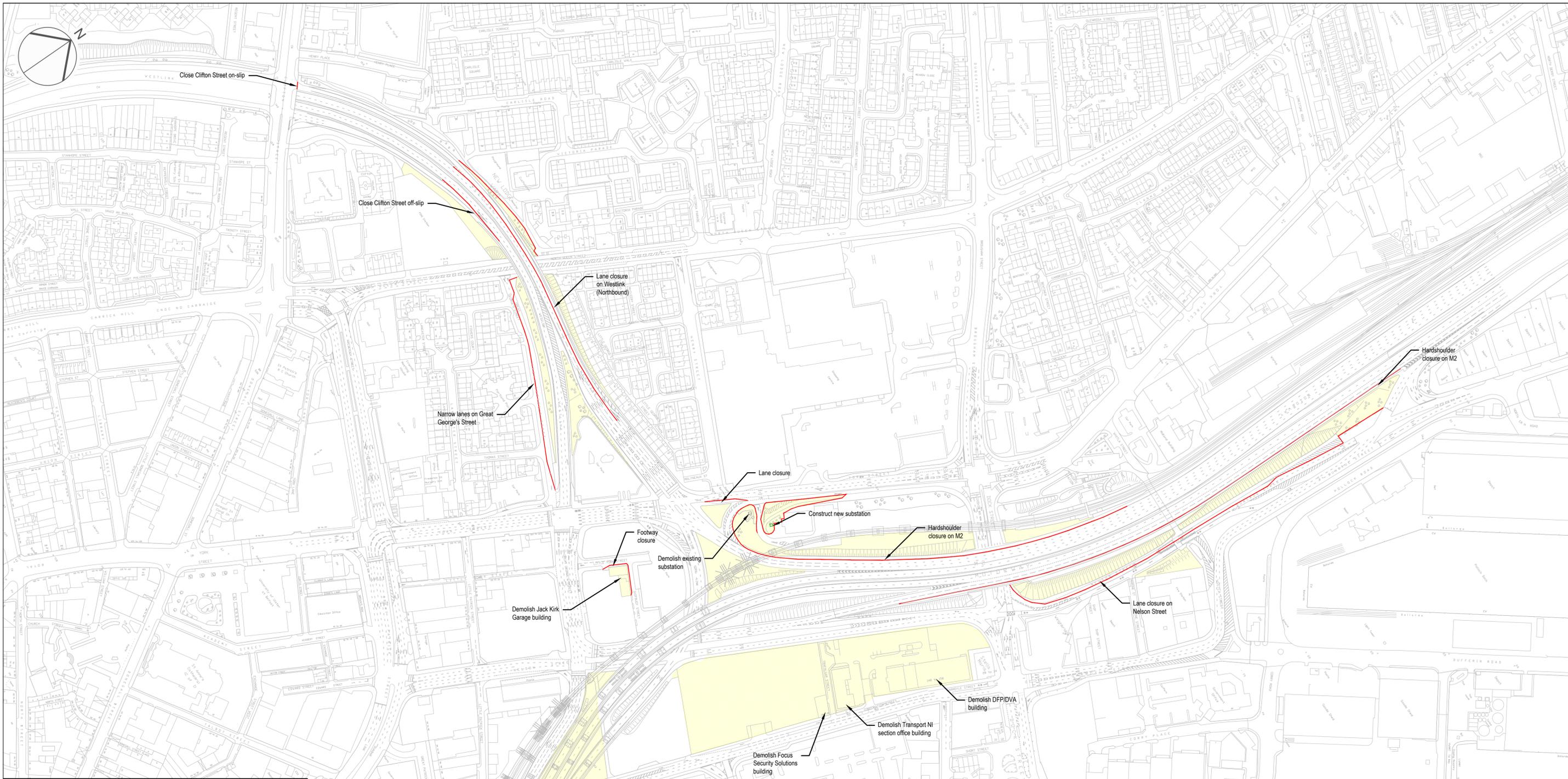
- 4.1.1.8 Based on the outline construction sequence, URS have been advised on minimum anticipated durations for each major phase within the sequence, which has informed an overall estimated construction period of 38 months.
- 4.1.1.9 Whilst the construction sequence will ultimately be a matter for the appointed contractor to develop, the outline construction sequence developed by URS is considered feasible and buildable within the constraints of the site.
- 4.1.1.10 No opinion is offered on an appointed contractor's possible strategy and sequence.

## APPENDIX A TEMPORARY TRAFFIC MANAGEMENT DRAWINGS

### List of Drawings

Drawing Nos.	Title
YSI-URS-XX-XX-DR-RE-TM001 to YSI-URS-XX-XX-DR-RE-TM014 inclusive	Temporary Traffic Management Arrangements

THIS PAGE INTENTIONALLY BLANK



- ### WORKS BEING UNDERTAKEN
1. Site clearance at Westlink northbound carriageway (including Little George's Street embankment)
  2. Site clearance at Westlink southbound carriageway (including Great George's Street embankment)
  3. Site clearance at Northside P&R overflow car park
  4. Demolition of Jack Kirk Garage and outbuildings
  5. Site clearance of areas of land underneath Lagan Bridge beside M3 off-slip to Nelson Street
  6. Site clearance in Transport NI depot and lands south of depot (including demolition of Transport NI, DFP/DVA, Focus Security Solutions and associated outbuildings)
  7. Site clearance of M2 embankment adjacent to Galway House
  8. Site clearance of M2 embankment adjacent to York Street to M2 slip road
  9. Site clearance of island on York Street beside Cityside Retail Park
  10. Site clearance of M2 embankment adjacent to Nelson Street and Whita Street Fire Station
  11. Site clearance of M2 embankment adjacent to Yorkgate train station.

 ROAD LAYOUT SHOWN IS PRELIMINARY AND SUBJECT TO CHANGE AS PART OF DESIGN DEVELOPMENT

### LEGEND

	UNDER CONSTRUCTION
	CONSTRUCTION COMPLETED
	CONSTRUCTED TO CUT-OFF LEVEL
	CONING
	TEMPORARY LANE MARKINGS
	WORKS AREA

This material is based upon Crown Copyright and is reproduced with the permission of Land and Property Services under delegated authority from the Controller of Her Majesty's Stationery Office, © Crown Copyright and database rights NIMA ES&LA 214

Unauthorised reproduction infringes © Crown Copyright and may lead to prosecution or civil proceedings

This drawing contains information which is the property of Transport NI. It is furnished in confidence and may not be copied, used or disclosed in whole or in part without prior written consent.

Revised Legend	AN	JMcB	30/09/14	P1
Revision Details	By	Check	Date	Suffix

**NOTES**

1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT DOCUMENTATION.
2. DO NOT SCALE FROM THIS DRAWING. USE ONLY PRINTED DIMENSIONS.
3. ALL DIMENSIONS IN MILLIMETRES. ALL CHANGES, LEVELS AND COORDINATES ARE IN METRES UNLESS DEFINED OTHERWISE.
4. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH THE PROJECT HEALTH & SAFETY FILE FOR ANY IDENTIFIED POTENTIAL RISKS.

**SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION BOX**

IT IS ASSUMED THAT ALL WORKS ON THIS DRAWING WILL BE CARRIED OUT BY A COMPETENT CONTRACTOR WORKING WHERE APPROPRIATE, TO AN APPROPRIATE METHOD STATEMENT.

THIS DRAWING IS TO BE USED ONLY FOR THE PURPOSE OF ISSUE THAT IT WAS ISSUED FOR AND IS SUBJECT TO AMENDMENT.

Purpose of issue  
**DRAFT**

Client  
**Transport NI**

Project Title  
**York Street Interchange**

Drawing Title  
**Temporary Traffic Management Phase 1**

Designed	Drawn	Checked	Approved	Date
AN	AN	JMcB	JMcB	17.07.14
URS Internal Project No. 47037827		Suitability		
Scale @ A1 1:2000		Zone / Mileage		

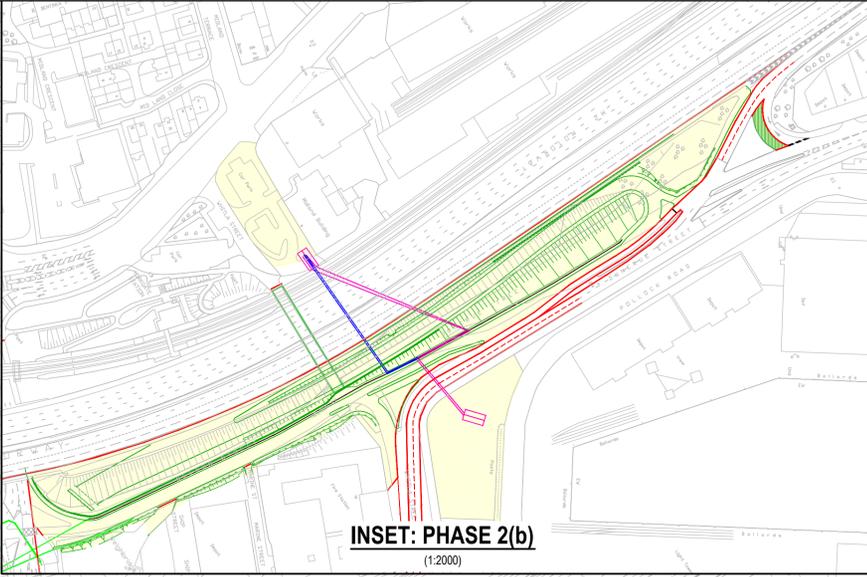
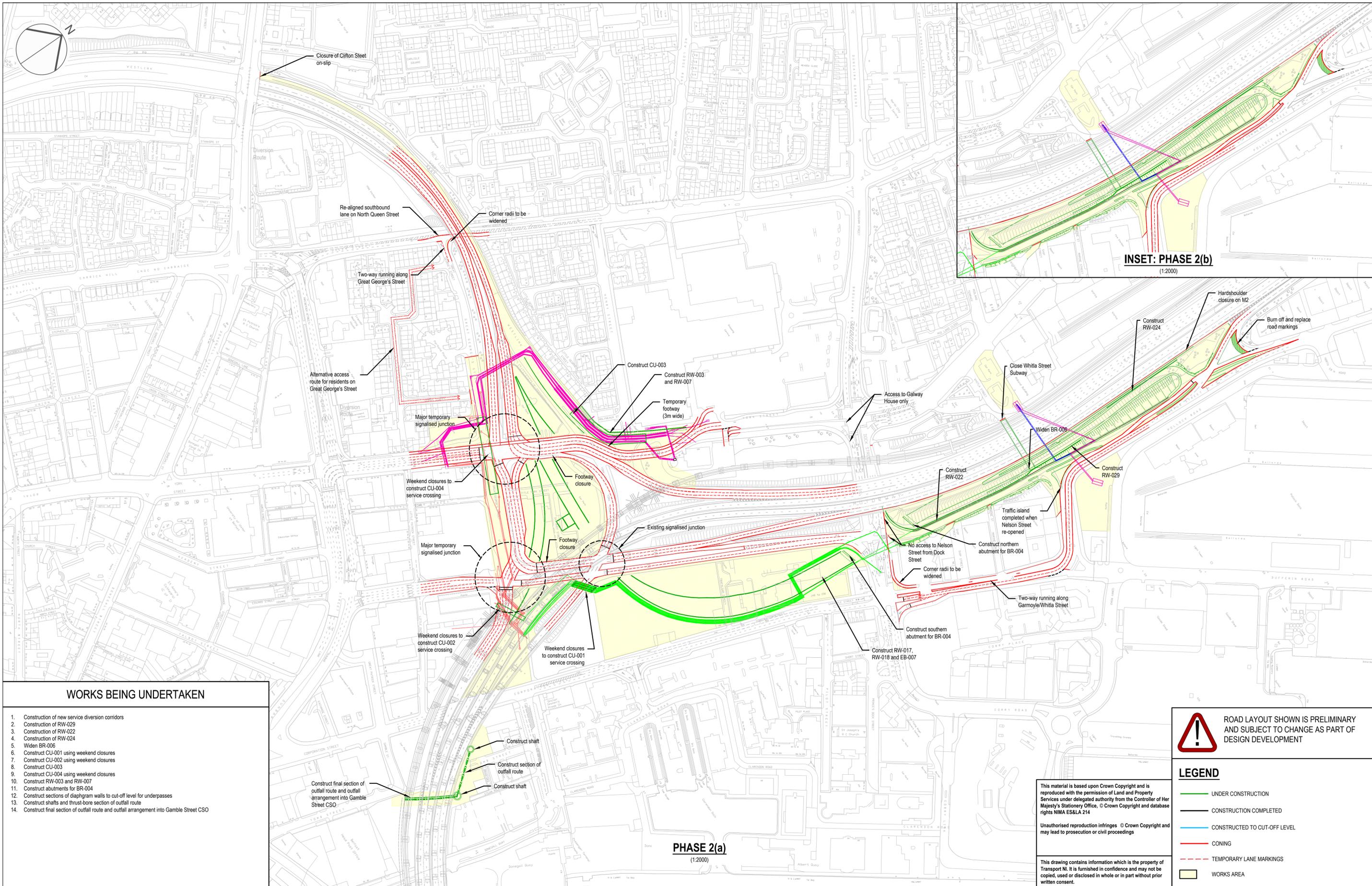
URS Infrastructure & Environment UK Limited  
Beechill House  
Beechill Road, Belfast  
BT8 7RP  
Tel: T +44 (0)28 9070 5111  
Fax: F +44 (0)28 9079 9651  
www.urscorp.com

**URS**

Drawing Number  
**YSI-URS-XX-XX-DR-RE-TM001**

Rev  
**P1**

THIS DOCUMENT HAS BEEN PREPARED PURSUANT TO AND SUBJECT TO THE TERMS OF URS' APPOINTMENT BY ITS CLIENT. URS ACCEPTS NO LIABILITY FOR ANY USE OF THIS DOCUMENT OTHER THAN BY ITS ORIGINAL CLIENT OR FOLLOWING URS' EXPRESS AGREEMENT TO SUCH USE, AND ONLY FOR THE PURPOSES FOR WHICH IT WAS PREPARED AND PROVIDED.



- WORKS BEING UNDERTAKEN**
1. Construction of new service diversion corridors
  2. Construction of RW-029
  3. Construction of RW-022
  4. Construction of RW-024
  5. Widen BR-006
  6. Construct CU-001 using weekend closures
  7. Construct CU-002 using weekend closures
  8. Construct CU-003
  9. Construct CU-004 using weekend closures
  10. Construct RW-003 and RW-007
  11. Construct abutments for BR-004
  12. Construct sections of diaphragm walls to cut-off level for underpasses
  13. Construct shafts and thrust-bore section of outfall route
  14. Construct final section of outfall route and outfall arrangement into Gamble Street CSO

 ROAD LAYOUT SHOWN IS PRELIMINARY AND SUBJECT TO CHANGE AS PART OF DESIGN DEVELOPMENT

**LEGEND**

- UNDER CONSTRUCTION
- CONSTRUCTION COMPLETED
- CONSTRUCTED TO CUT-OFF LEVEL
- CONING
- - - TEMPORARY LANE MARKINGS
- WORKS AREA

This material is based upon Crown Copyright and is reproduced with the permission of Land and Property Services under delegated authority from the Controller of Her Majesty's Stationery Office, © Crown Copyright and database rights NIMA ES&LA 214

Unauthorised reproduction infringes © Crown Copyright and may lead to prosecution or civil proceedings

This drawing contains information which is the property of Transport NI. It is furnished in confidence and may not be copied, used or disclosed in whole or in part without prior written consent.

Revised Legend	AN	Mcb	30/09/14	P1
Revision Details	By	Check	Date	Suffix

**NOTES**

1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT DOCUMENTATION.
2. DO NOT SCALE FROM THIS DRAWING. USE ONLY PRINTED DIMENSIONS.
3. ALL DIMENSIONS IN MILLIMETRES. ALL CHANGES, LEVELS AND COORDINATES ARE IN METRES UNLESS DEFINED OTHERWISE.
4. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH THE PROJECT HEALTH & SAFETY FILE FOR ANY IDENTIFIED POTENTIAL RISKS.

**SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION BOX**

IT IS ASSUMED THAT ALL WORKS ON THIS DRAWING WILL BE CARRIED OUT BY A COMPETENT CONTRACTOR WORKING, WHERE APPROPRIATE, TO AN APPROPRIATE METHOD STATEMENT.

THIS DRAWING IS TO BE USED ONLY FOR THE PURPOSE OF ISSUE THAT IT WAS ISSUED FOR AND IS SUBJECT TO AMENDMENT.

Purpose of issue

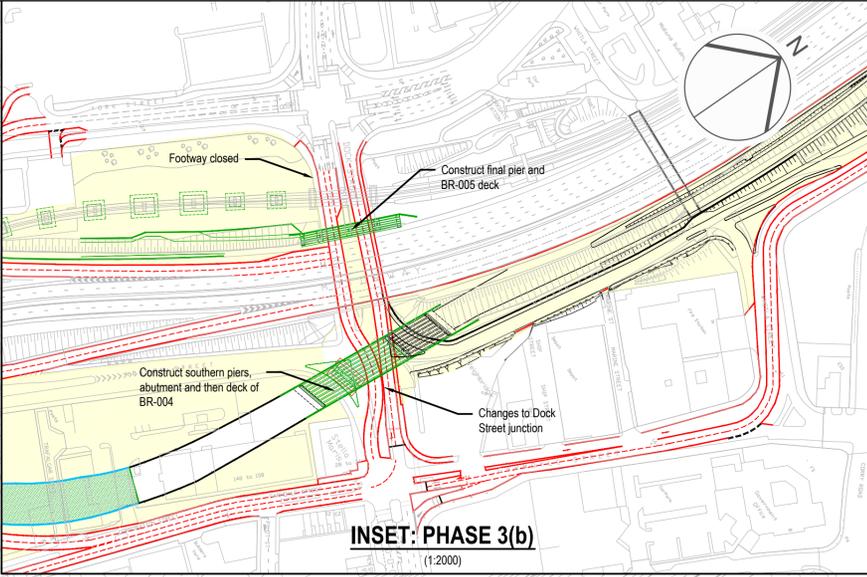
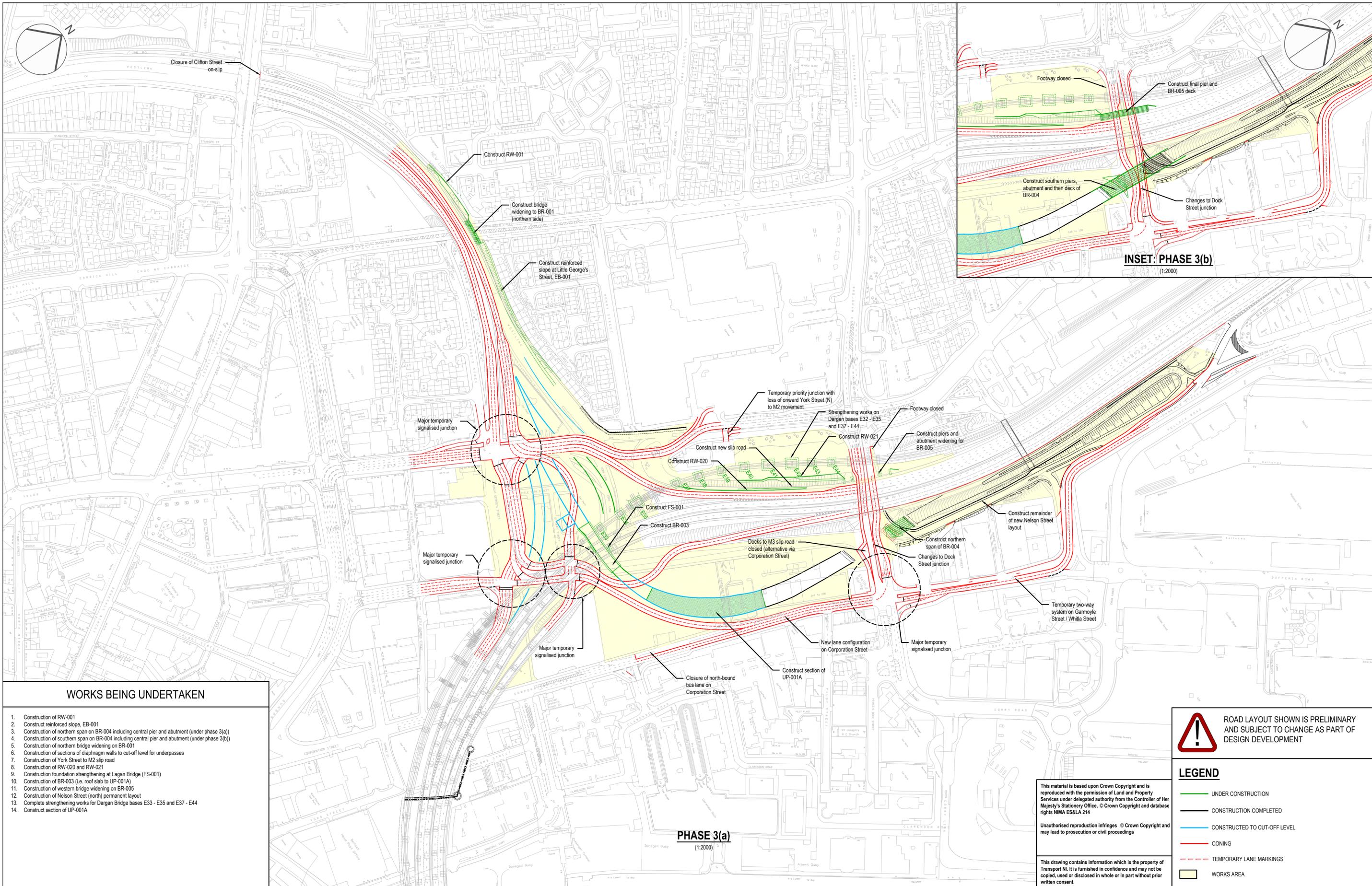
**DRAFT**

Client: Transport NI

Project Title: York Street Interchange

Drawing Title: Temporary Traffic Management Phase 2

Designed AN	Drawn AN	Checked JMcb	Approved JMcb	Date 17.07.14
URS Internal Project No. 47037827		Scale @ A1 1:2000		
Zone / Mileage		Zone / Mileage		
URS Infrastructure & Environment UK Limited Beechill House Beechill Road, Belfast BT8 7RP Tel: +44 (0)28 9070 5111 Fax: +44 (0)28 9079 9651 www.urscorp.com				
Drawing Number: YSI-URS-XX-XX-DR-RE-TM002				Rev: P1



- ### WORKS BEING UNDERTAKEN
1. Construction of RW-001
  2. Construct reinforced slope, EB-001
  3. Construction of northern span on BR-004 including central pier and abutment (under phase 3(a))
  4. Construction of southern span on BR-004 including central pier and abutment (under phase 3(b))
  5. Construction of northern bridge widening on BR-001
  6. Construction of sections of diaphragm walls to cut-off level for underpasses
  7. Construction of York Street to M2 slip road
  8. Construction of RW-020 and RW-021
  9. Construction foundation strengthening at Lagan Bridge (FS-001)
  10. Construction of BR-003 (i.e. roof slab to UP-001A)
  11. Construction of western bridge widening on BR-005
  12. Construction of Nelson Street (north) permanent layout
  13. Complete strengthening works for Dargan Bridge bases E33 - E35 and E37 - E44
  14. Construct section of UP-001A

**ROAD LAYOUT SHOWN IS PRELIMINARY AND SUBJECT TO CHANGE AS PART OF DESIGN DEVELOPMENT**

### LEGEND

	UNDER CONSTRUCTION
	CONSTRUCTION COMPLETED
	CONSTRUCTED TO CUT-OFF LEVEL
	CONING
	TEMPORARY LANE MARKINGS
	WORKS AREA

This material is based upon Crown Copyright and is reproduced with the permission of Land and Property Services under delegated authority from the Controller of Her Majesty's Stationery Office, © Crown Copyright and database rights NIMA ES&LA 214

Unauthorised reproduction infringes © Crown Copyright and may lead to prosecution or civil proceedings

This drawing contains information which is the property of Transport NI. It is furnished in confidence and may not be copied, used or disclosed in whole or in part without prior written consent.

NOTES			
1	THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT DOCUMENTATION.		
2	DO NOT SCALE FROM THIS DRAWING. USE ONLY PRINTED DIMENSIONS.		
3	ALL DIMENSIONS IN MILLIMETRES. ALL CHANGES, LEVELS AND COORDINATES ARE IN METRES UNLESS DEFINED OTHERWISE.		
4	THIS DRAWING IS TO BE READ IN CONJUNCTION WITH THE PROJECT HEALTH & SAFETY FILE FOR ANY IDENTIFIED POTENTIAL RISKS.		
6	Additional lane WL_M3 added	KMcG/McB	21/10/14
2	Revised Legend	AN	30/09/14
	Revision Details	By	Date
		Check	Suffix

SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION BOX	
IT IS ASSUMED THAT ALL WORKS ON THIS DRAWING WILL BE CARRIED OUT BY A COMPETENT CONTRACTOR WORKING, WHERE APPROPRIATE, TO AN APPROPRIATE METHOD STATEMENT.	
THIS DRAWING IS TO BE USED ONLY FOR THE PURPOSE OF ISSUE THAT IT WAS ISSUED FOR AND IS SUBJECT TO AMENDMENT.	
Purpose of issue	DRAFT

Client	Transport NI
--------	--------------

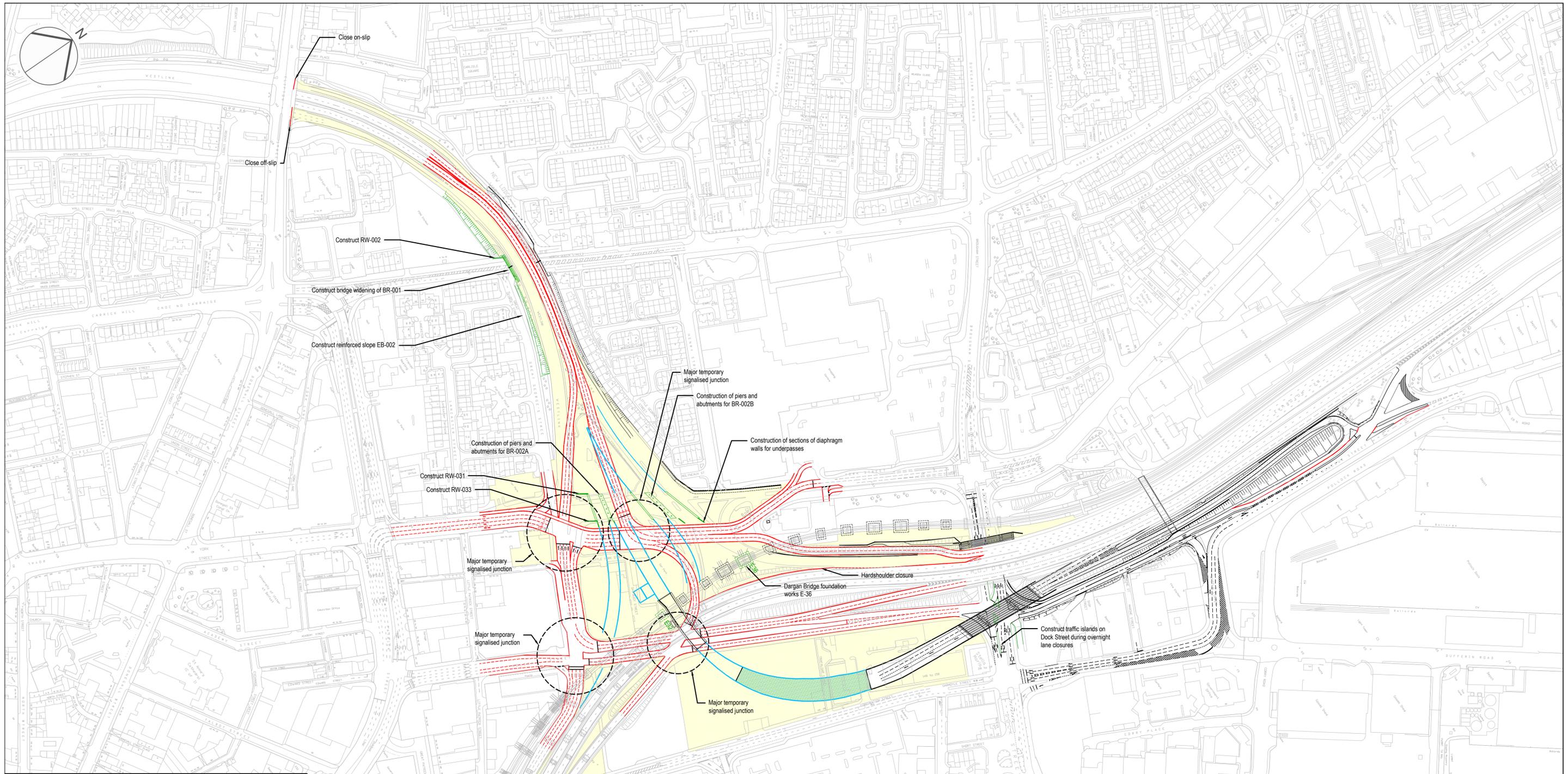
Project Title	York Street Interchange
---------------	-------------------------

Drawing Title	Temporary Traffic Management
	Phase 3

Designed	AN	Drawn	AN	Checked	JMcB	Approved	JMcB	Date	17.07.14
URS Internal Project No.		47037827		Stability		Zone / Mileage			
Scale @ A1		1:2000							

URS Infrastructure & Environment UK Limited	
Beechill House Beechill Road, Belfast BT8 7RP Tel: +44 (0)28 9070 5111 Fax: +44 (0)28 9079 9651 www.urscorp.com	
Drawing Number	YSI-URS-XX-XX-DR-RE-TM003
Rev	P2

THIS DOCUMENT HAS BEEN PREPARED PURSUANT TO AND SUBJECT TO THE TERMS OF URS' APPOINTMENT BY ITS CLIENT. URS ACCEPTS NO LIABILITY FOR ANY USE OF THIS DOCUMENT OTHER THAN BY ITS ORIGINAL CLIENT OR FOLLOWING URS' EXPRESS AGREEMENT TO SUCH USE, AND ONLY FOR THE PURPOSES FOR WHICH IT WAS PREPARED AND PROVIDED.



**WORKS BEING UNDERTAKEN**

1. Construct RW-002
2. Construction of southern widening of BR-001
3. Construction of reinforced slope at Great George's Street (EB-002)
4. Construction of RW-31, 33 and piers + abutments for BR-002B
5. Construction of southern abutment and pier for BR-002A
6. Dargan Bridge foundation works E-32 and E-36
7. Construction of sections of diaphragm walls for underpasses
8. Construct traffic islands on Dock Street

ROAD LAYOUT SHOWN IS PRELIMINARY AND SUBJECT TO CHANGE AS PART OF DESIGN DEVELOPMENT

**LEGEND**

	UNDER CONSTRUCTION
	CONSTRUCTION COMPLETED
	CONSTRUCTED TO CUT-OFF LEVEL
	CONING
	TEMPORARY LANE MARKINGS
	WORKS AREA

This material is based upon Crown Copyright and is reproduced with the permission of Land and Property Services under delegated authority from the Controller of Her Majesty's Stationery Office, © Crown Copyright and database rights NIMA ES&LA 214

Unauthorised reproduction infringes © Crown Copyright and may lead to prosecution or civil proceedings

This drawing contains information which is the property of Transport NI. It is furnished in confidence and may not be copied, used or disclosed in whole or in part without prior written consent.

NOTES				
1	THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT DOCUMENTATION.			
2	DO NOT SCALE FROM THIS DRAWING. USE ONLY PRINTED DIMENSIONS.			
3	ALL DIMENSIONS IN MILLIMETRES. ALL CHANGES, LEVELS AND COORDINATES ARE IN METRES UNLESS DEFINED OTHERWISE.			
4	THIS DRAWING IS TO BE READ IN CONJUNCTION WITH THE PROJECT HEALTH & SAFETY FILE FOR ANY IDENTIFIED POTENTIAL RISKS.			

SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION BOX	
IT IS ASSUMED THAT ALL WORKS ON THIS DRAWING WILL BE CARRIED OUT BY A COMPETENT CONTRACTOR WORKING, WHERE APPROPRIATE, TO AN APPROPRIATE METHOD STATEMENT.	
THIS DRAWING IS TO BE USED ONLY FOR THE PURPOSE OF ISSUE THAT IT WAS ISSUED FOR AND IS SUBJECT TO AMENDMENT.	
Purpose of issue	<b>DRAFT</b>

Client  
**Transport NI**

Project Title  
**York Street Interchange**

Drawing Title  
**Temporary Traffic Management  
Phase 4**

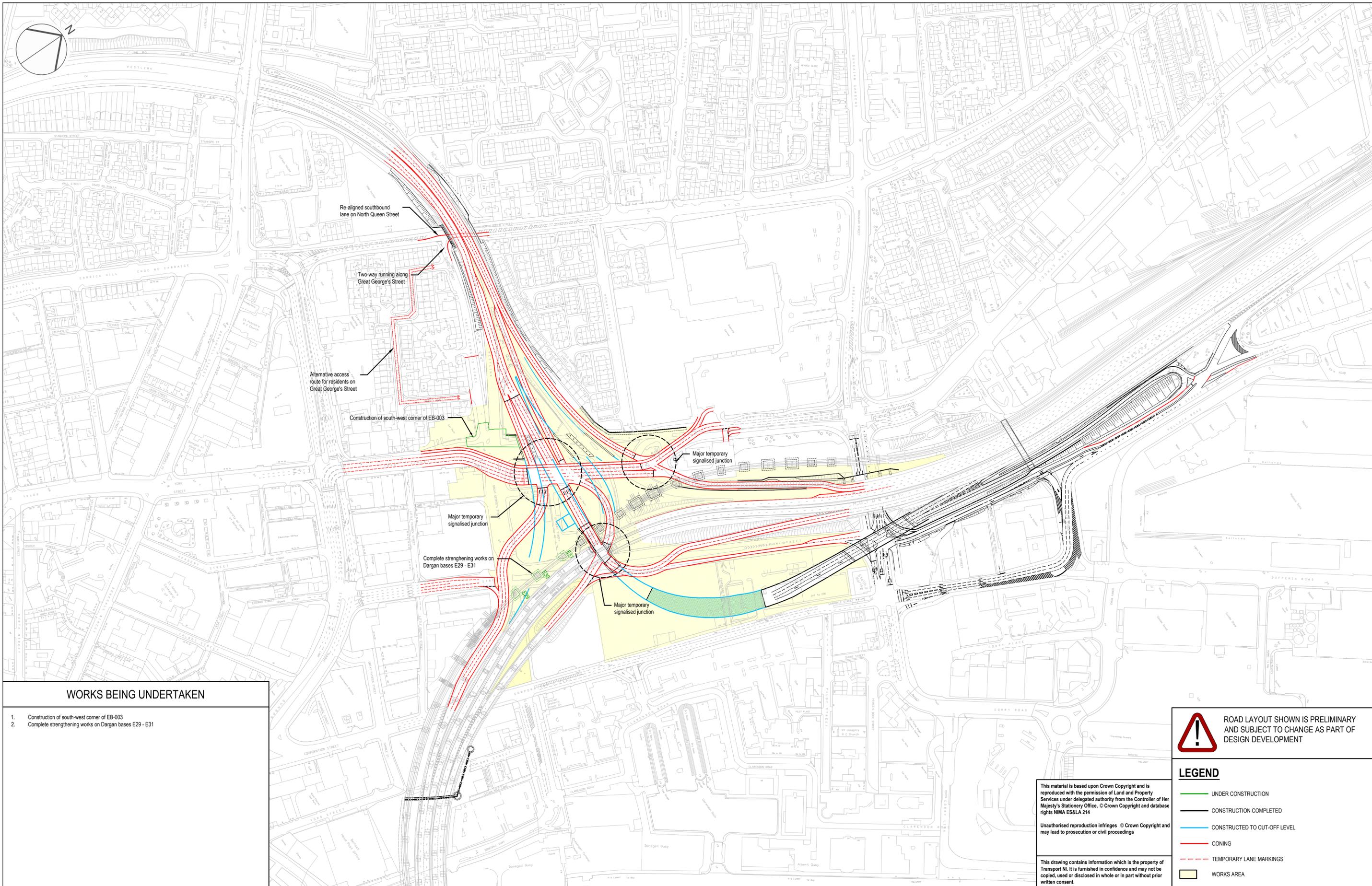
Designed	Drawn	Checked	Approved	Date
AN	AN	JMcB	JMcB	18/7/14
URS Internal Project No. 47037827		Suitability		
Scale @ A1 1:2000	Zone / Mileage N/A			

URS Infrastructure & Environment UK Limited  
Beechill House  
Beechill Road, Belfast  
BT8 7RP  
Tel: T +44 (0)28 9070 5111  
Fax: F +44 (0)28 9079 5651  
www.ursi.co.uk

Drawing Number  
**YSI-URS-XX-XX-DR-RE-TM004**

Rev  
**P3**

THIS DOCUMENT HAS BEEN PREPARED PURSUANT TO AND SUBJECT TO THE TERMS OF URS' APPOINTMENT BY ITS CLIENT. URS ACCEPTS NO LIABILITY FOR ANY USE OF THIS DOCUMENT OTHER THAN BY ITS ORIGINAL CLIENT OR FOLLOWING URS' EXPRESS AGREEMENT TO SUCH USE, AND ONLY FOR THE PURPOSES FOR WHICH IT WAS PREPARED AND PROVIDED.



**WORKS BEING UNDERTAKEN**

1. Construction of south-west corner of EB-003
2. Complete strengthening works on Dargan bases E29 - E31

ROAD LAYOUT SHOWN IS PRELIMINARY AND SUBJECT TO CHANGE AS PART OF DESIGN DEVELOPMENT

**LEGEND**

	UNDER CONSTRUCTION
	CONSTRUCTION COMPLETED
	CONSTRUCTED TO CUT-OFF LEVEL
	CONING
	TEMPORARY LANE MARKINGS
	WORKS AREA

This material is based upon Crown Copyright and is reproduced with the permission of Land and Property Services under delegated authority from the Controller of Her Majesty's Stationery Office, © Crown Copyright and database rights NIMA ES&LA 214

Unauthorised reproduction infringes © Crown Copyright and may lead to prosecution or civil proceedings

This drawing contains information which is the property of Transport NI. It is furnished in confidence and may not be copied, used or disclosed in whole or in part without prior written consent.

**NOTES**

1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT DOCUMENTATION.
2. DO NOT SCALE FROM THIS DRAWING. USE ONLY PRINTED DIMENSIONS.
3. ALL DIMENSIONS IN MILLIMETRES. ALL CHANGES, LEVELS AND COORDINATES ARE IN METRES UNLESS DEFINED OTHERWISE.
4. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH THE PROJECT HEALTH & SAFETY FILE FOR ANY IDENTIFIED POTENTIAL RISKS.

Revised traffic lanes for M2/M3 - Westlink	AN	JMcB	30/09/14	P1
Revision Details	By	Check	Date	Suffix

**SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION BOX**

IT IS ASSUMED THAT ALL WORKS ON THIS DRAWING WILL BE CARRIED OUT BY A COMPETENT CONTRACTOR WORKING WHERE APPROPRIATE, TO AN APPROPRIATE METHOD STATEMENT.

THIS DRAWING IS TO BE USED ONLY FOR THE PURPOSE OF ISSUE THAT IT WAS ISSUED FOR AND IS SUBJECT TO AMENDMENT.

Purpose of issue

**DRAFT**

Client

Transport NI

Project Title

York Street Interchange

Drawing Title

Temporary Traffic Management  
Phase 5

Designed	Drawn	Checked	Approved	Date
AN	AN	JMcB	JMcB	17.07.14
URS Internal Project No. 47037827		Stability		
Scale @ A1 1:2000		Zone / Mileage		

THIS DOCUMENT HAS BEEN PREPARED PURSUANT TO AND SUBJECT TO THE TERMS OF URS' APPOINTMENT BY ITS CLIENT. URS ACCEPTS NO LIABILITY FOR ANY USE OF THIS DOCUMENT OTHER THAN BY ITS ORIGINAL CLIENT OR FOLLOWING URS' EXPRESS AGREEMENT TO SUCH USE, AND ONLY FOR THE PURPOSES FOR WHICH IT WAS PREPARED AND PROVIDED.

URS Infrastructure & Environment UK Limited  
Beechill House  
Beechill Road, Belfast  
BT8 7RP  
Tel: T +44 (0)28 9070 5111  
Fax: F +44 (0)28 9079 9651  
www.urscorp.com

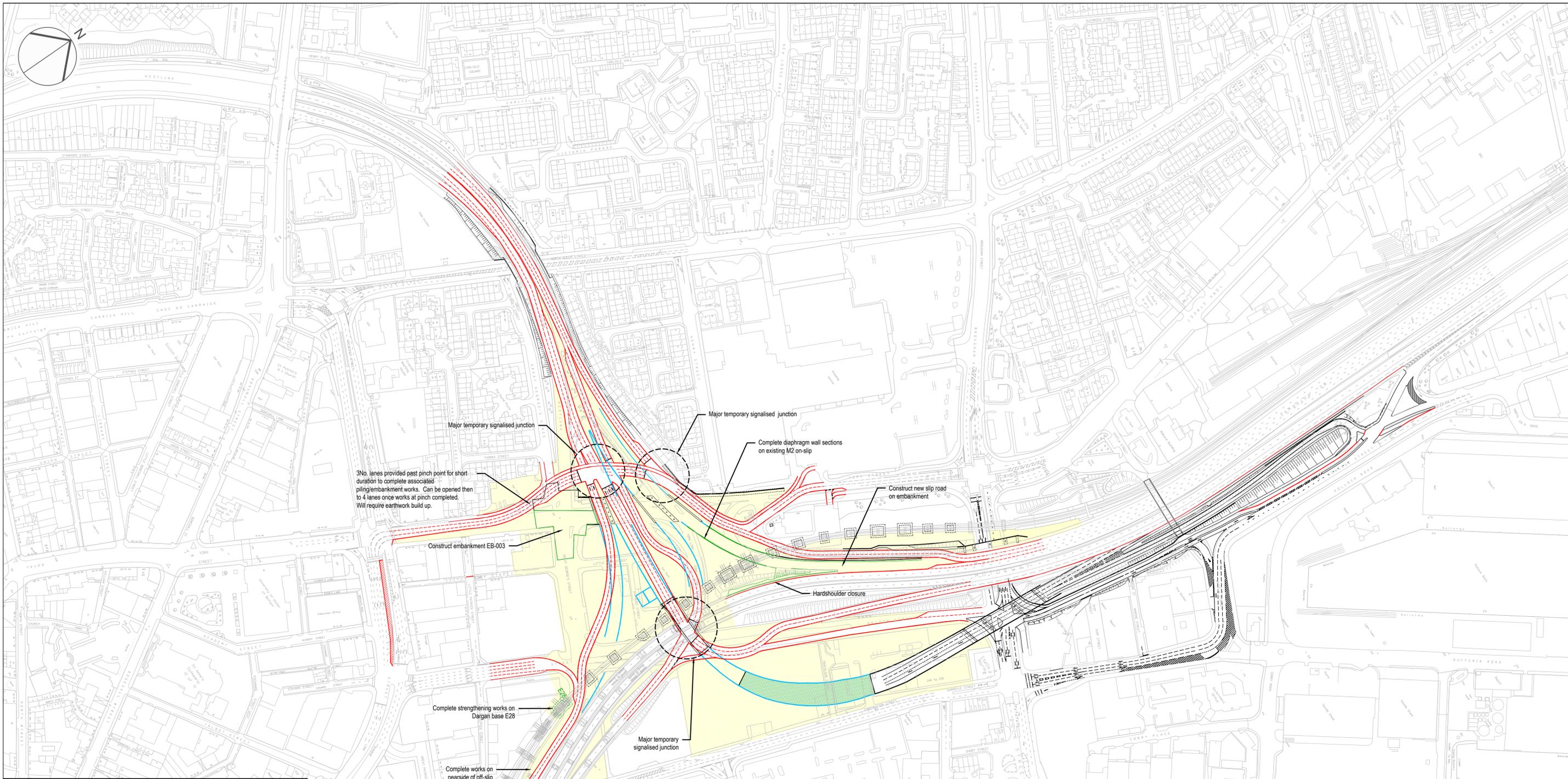
URS

Drawing Number

YSI-URS-XX-XX-DR-RE-TM005

Rev

P1



**WORKS BEING UNDERTAKEN**

1. Complete construction of EB-003 (southern side of BR-002A).
2. Construct sections of diaphragm walls to cut-off level for underpasses.
3. Construct Westlink - M2 slip road (on existing M2 embankment).
4. Complete works on near-side of M3 off-slip.
5. Complete strengthening works for Dargan Base E28.

 ROAD LAYOUT SHOWN IS PRELIMINARY AND SUBJECT TO CHANGE AS PART OF DESIGN DEVELOPMENT

**LEGEND**

	UNDER CONSTRUCTION
	CONSTRUCTION COMPLETED
	CONSTRUCTED TO CUT-OFF LEVEL
	CONING
	TEMPORARY LANE MARKINGS
	WORKS AREA

This material is based upon Crown Copyright and is reproduced with the permission of Land and Property Services under delegated authority from the Controller of Her Majesty's Stationery Office, © Crown Copyright and database rights NIMA ES&LA 214

Unauthorised reproduction infringes © Crown Copyright and may lead to prosecution or civil proceedings

This drawing contains information which is the property of Transport NI. It is furnished in confidence and may not be copied, used or disclosed in whole or in part without prior written consent.

NOTES			
1.	THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT DOCUMENTATION.		
2.	DO NOT SCALE FROM THIS DRAWING. USE ONLY PRINTED DIMENSIONS.		
3.	ALL DIMENSIONS IN MILLIMETRES. ALL CHANGINGS, LEVELS AND COORDINATES ARE IN METRES UNLESS DEFINED OTHERWISE.		
4.	THIS DRAWING IS TO BE READ IN CONJUNCTION WITH THE PROJECT HEALTH & SAFETY FILE FOR ANY IDENTIFIED POTENTIAL RISKS.		

SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION BOX	
IT IS ASSUMED THAT ALL WORKS ON THIS DRAWING WILL BE CARRIED OUT BY A COMPETENT CONTRACTOR WORKING WHERE APPROPRIATE, TO AN APPROPRIATE METHOD STATEMENT.	
THIS DRAWING IS TO BE USED ONLY FOR THE PURPOSE OF ISSUE THAT IT WAS ISSUED FOR AND IS SUBJECT TO AMENDMENT.	
Purpose of issue	<b>DRAFT</b>

Client	Transport NI
--------	--------------

Project Title	York Street Interchange
---------------	-------------------------

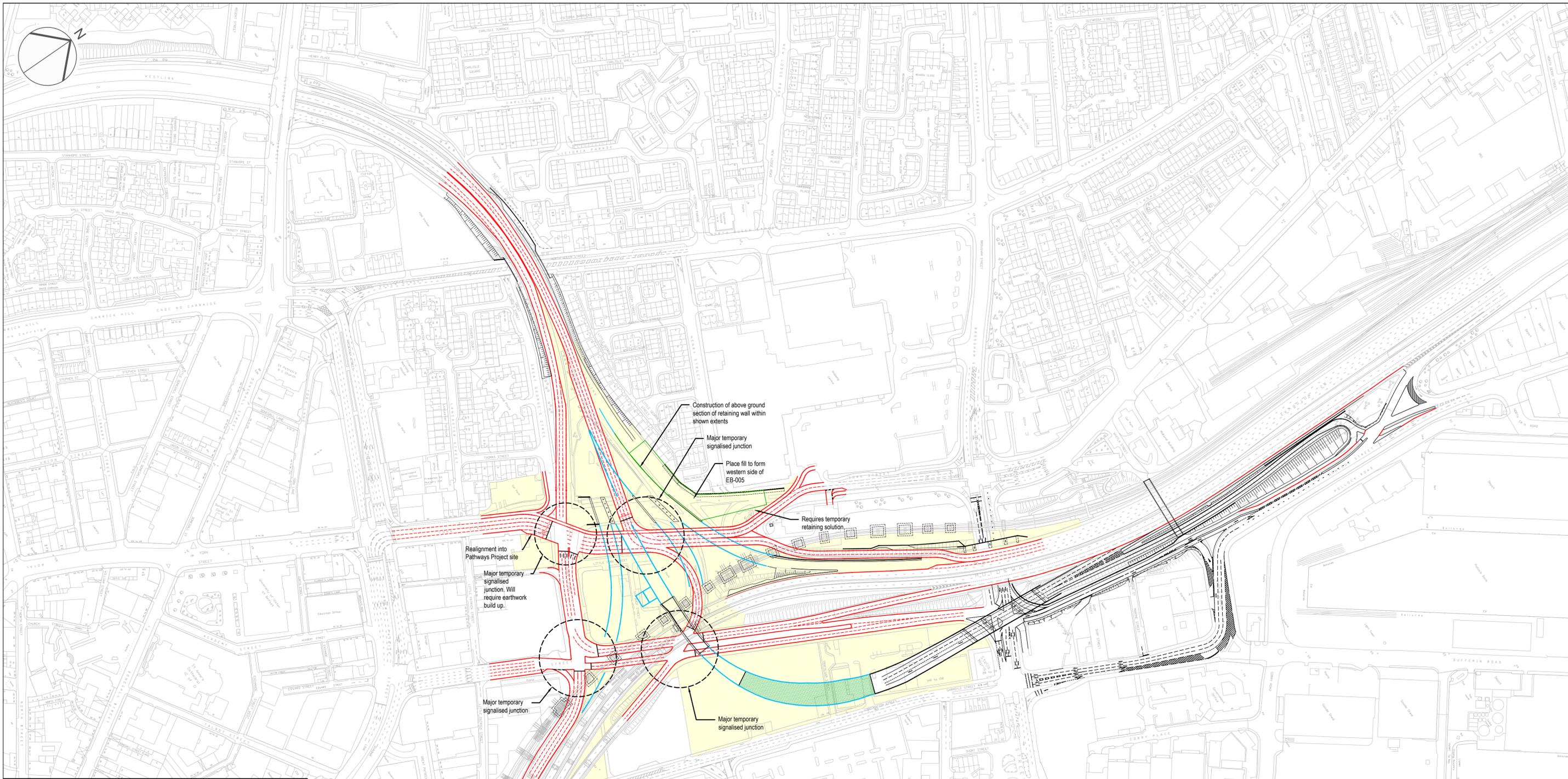
Drawing Title	Temporary Traffic Management Phase 6
---------------	---

Designed	AN	Drawn	AN	Checked	JMcB	Approved	JMcB	Date	17.07.14
URS Internal Project No.		47037827		Scale @ A1		Zone / Mileage			
Scale @ A1		1:2000							

URS Infrastructure & Environment UK Limited	
Beechill House Beechill Road, Belfast BT8 7RP	
Tel: T: +44 (0)28 9070 5111 Fax: F: +44 (0)28 9079 9651 www.ursi.co.uk	
Drawing Number	YSI-URS-XX-XX-DR-RE-TM006
Rev	P1



THIS DOCUMENT HAS BEEN PREPARED PURSUANT TO AND SUBJECT TO THE TERMS OF URS' APPOINTMENT BY ITS CLIENT. URS ACCEPTS NO LIABILITY FOR ANY USE OF THIS DOCUMENT OTHER THAN BY ITS ORIGINAL CLIENT OR FOLLOWING URS' EXPRESS AGREEMENT TO SUCH USE, AND ONLY FOR THE PURPOSES FOR WHICH IT WAS PREPARED AND PROVIDED.



**WORKS BEING UNDERTAKEN**

1. Placing of fill for EB-005 (northern side of BR-002B).  
Note: requires temporary retaining solution.
2. Construction of above ground section of retaining wall to UP-002A within extents shown.

Realignment into Pathways Project site

Major temporary signalled junction. Will require earthwork build up.

Major temporary signalled junction

Major temporary signalled junction

Major temporary signalled junction

Construction of above ground section of retaining wall within shown extents

Place fill to form western side of EB-005

Requires temporary retaining solution

 ROAD LAYOUT SHOWN IS PRELIMINARY AND SUBJECT TO CHANGE AS PART OF DESIGN DEVELOPMENT

**LEGEND**

-  UNDER CONSTRUCTION
-  CONSTRUCTION COMPLETED
-  CONSTRUCTED TO CUT-OFF LEVEL
-  CONING
-  TEMPORARY LANE MARKINGS
-  WORKS AREA

This material is based upon Crown Copyright and is reproduced with the permission of Land and Property Services under delegated authority from the Controller of Her Majesty's Stationery Office, © Crown Copyright and database rights NIMA ES&LA 214

Unauthorised reproduction infringes © Crown Copyright and may lead to prosecution or civil proceedings

This drawing contains information which is the property of Transport NI. It is furnished in confidence and may not be copied, used or disclosed in whole or in part without prior written consent.

NOTES			
1.	THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT DOCUMENTATION.		
2.	DO NOT SCALE FROM THIS DRAWING. USE ONLY PRINTED DIMENSIONS.		
3.	ALL DIMENSIONS IN MILLIMETRES. ALL CHANGES, LEVELS AND COORDINATES ARE IN METRES UNLESS DEFINED OTHERWISE.		
4.	THIS DRAWING IS TO BE READ IN CONJUNCTION WITH THE PROJECT HEALTH & SAFETY FILE FOR ANY IDENTIFIED POTENTIAL RISKS.		

Additional lanes provided along Great George's Street	AN	JMcB	30/09/14	P1
Revision Details	By	Check	Date	Suffix

SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION BOX	
IT IS ASSUMED THAT ALL WORKS ON THIS DRAWING WILL BE CARRIED OUT BY A COMPETENT CONTRACTOR WORKING, WHERE APPROPRIATE, TO AN APPROPRIATE METHOD STATEMENT.	
THIS DRAWING IS TO BE USED ONLY FOR THE PURPOSE OF ISSUE THAT IT WAS ISSUED FOR AND IS SUBJECT TO AMENDMENT.	
Purpose of issue	<b>DRAFT</b>

Client	Transport NI
--------	--------------

Project Title	York Street Interchange
---------------	-------------------------

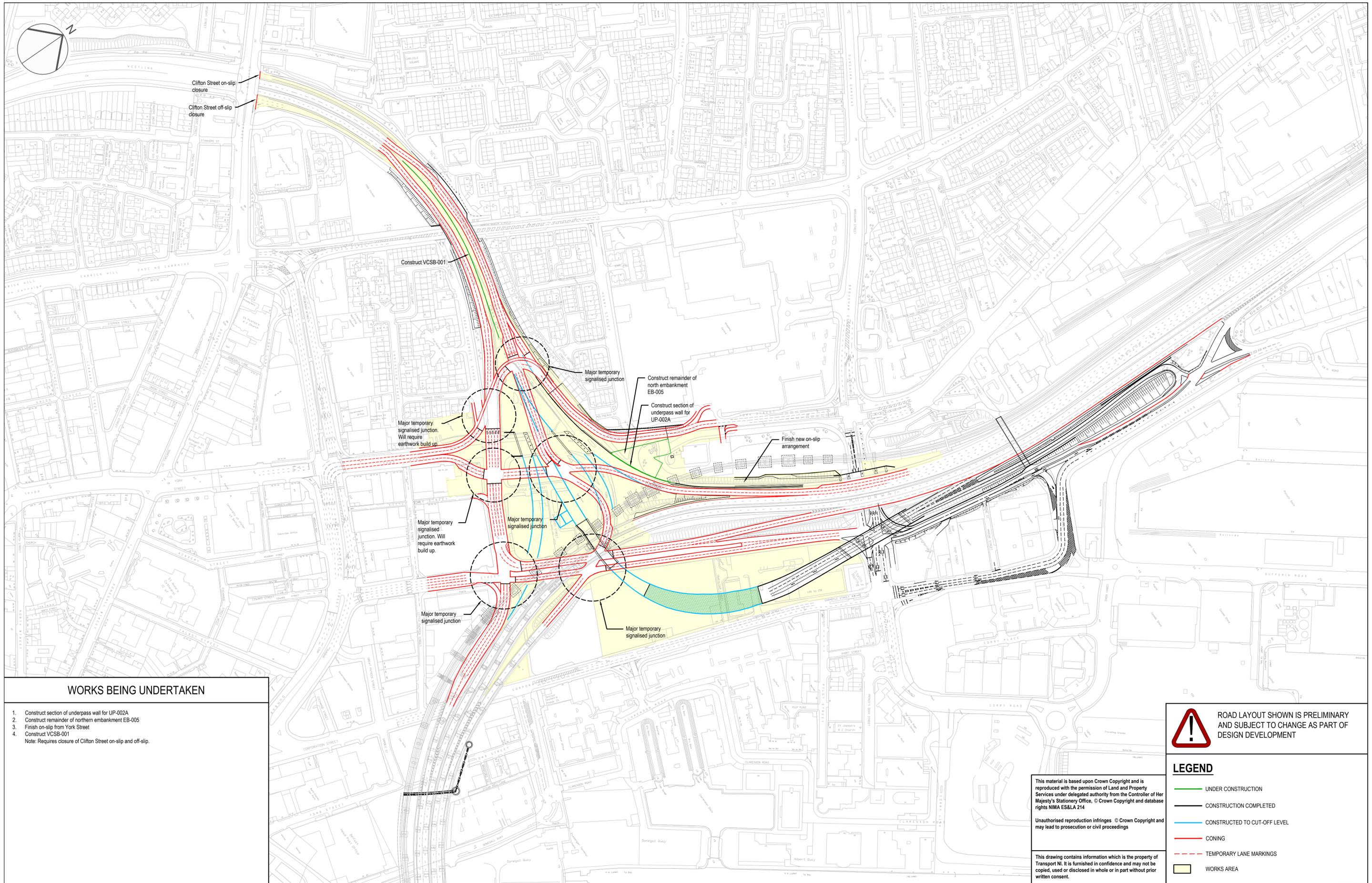
Drawing Title	Temporary Traffic Management Phase 7
---------------	---

Designed	Drawn	Checked	Approved	Date
AN	AN	JMcB	JMcB	17.07.14
URS Internal Project No. 47037827		Stability		
Scale @ A1 1:2000	Zone / Mileage			

URS Infrastructure & Environment UK Limited Beechill House Beechill Road, Belfast BT8 7RP Tel: T +44 (0)28 9070 5111 Fax: F +44 (0)28 9079 9651 www.ursgroup.com	
Drawing Number <b>YSI-URS-XX-XX-DR-RE-TM007</b>	Rev <b>P1</b>



This document has been prepared pursuant to and subject to the terms of URS' APPOINTMENT BY ITS CLIENT. URS ACCEPTS NO LIABILITY FOR ANY USE OF THIS DOCUMENT OTHER THAN BY ITS ORIGINAL CLIENT OR FOLLOWING URS' EXPRESS AGREEMENT TO SUCH USE, AND ONLY FOR THE PURPOSES FOR WHICH IT WAS PREPARED AND PROVIDED.



**WORKS BEING UNDERTAKEN**

1. Construct section of underpass wall for UP-002A
  2. Construct remainder of northern embankment EB-005
  3. Finish on-slip from York Street
  4. Construct VCSB-001
- Note: Requires closure of Clifton Street on-slip and off-slip.



ROAD LAYOUT SHOWN IS PRELIMINARY AND SUBJECT TO CHANGE AS PART OF DESIGN DEVELOPMENT

**LEGEND**

- UNDER CONSTRUCTION
- CONSTRUCTION COMPLETED
- CONSTRUCTED TO CUT-OFF LEVEL
- CONING
- - - TEMPORARY LANE MARKINGS
- WORKS AREA

This material is based upon Crown Copyright and is reproduced with the permission of Land and Property Services under delegated authority from the Controller of Her Majesty's Stationery Office. © Crown Copyright and database rights NIMA ES&LA 214

Unauthorised reproduction infringes © Crown Copyright and may lead to prosecution or civil proceedings

This drawing contains information which is the property of Transport NI. It is furnished in confidence and may not be copied, used or disclosed in whole or in part without prior written consent.

NOTES			
1.	THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT DOCUMENTATION.		
2.	DO NOT SCALE FROM THIS DRAWING. USE ONLY PRINTED DIMENSIONS.		
3.	ALL DIMENSIONS IN MILLIMETRES. ALL CHANGINGS, LEVELS AND COORDINATES ARE IN METRES UNLESS DEFINED OTHERWISE.		
4.	THIS DRAWING IS TO BE READ IN CONJUNCTION WITH THE PROJECT HEALTH & SAFETY FILE FOR ANY IDENTIFIED POTENTIAL RISKS.		

Additional lanes provided along Great George's Street	AN	JMcB	30/09/14	P1
Revision Details	By	Check	Date	Suffix

SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION BOX	
IT IS ASSUMED THAT ALL WORKS ON THIS DRAWING WILL BE CARRIED OUT BY A COMPETENT CONTRACTOR WORKING WHERE APPROPRIATE, TO AN APPROPRIATE METHOD STATEMENT.	
THIS DRAWING IS TO BE USED ONLY FOR THE PURPOSE OF ISSUE THAT IT WAS ISSUED FOR AND IS SUBJECT TO AMENDMENT.	
Purpose of issue	<b>DRAFT</b>

Client	<b>Transport NI</b>
--------	---------------------

Project Title	<b>York Street Interchange</b>
---------------	--------------------------------

Drawing Title	<b>Temporary Traffic Management Phase 8</b>
---------------	---

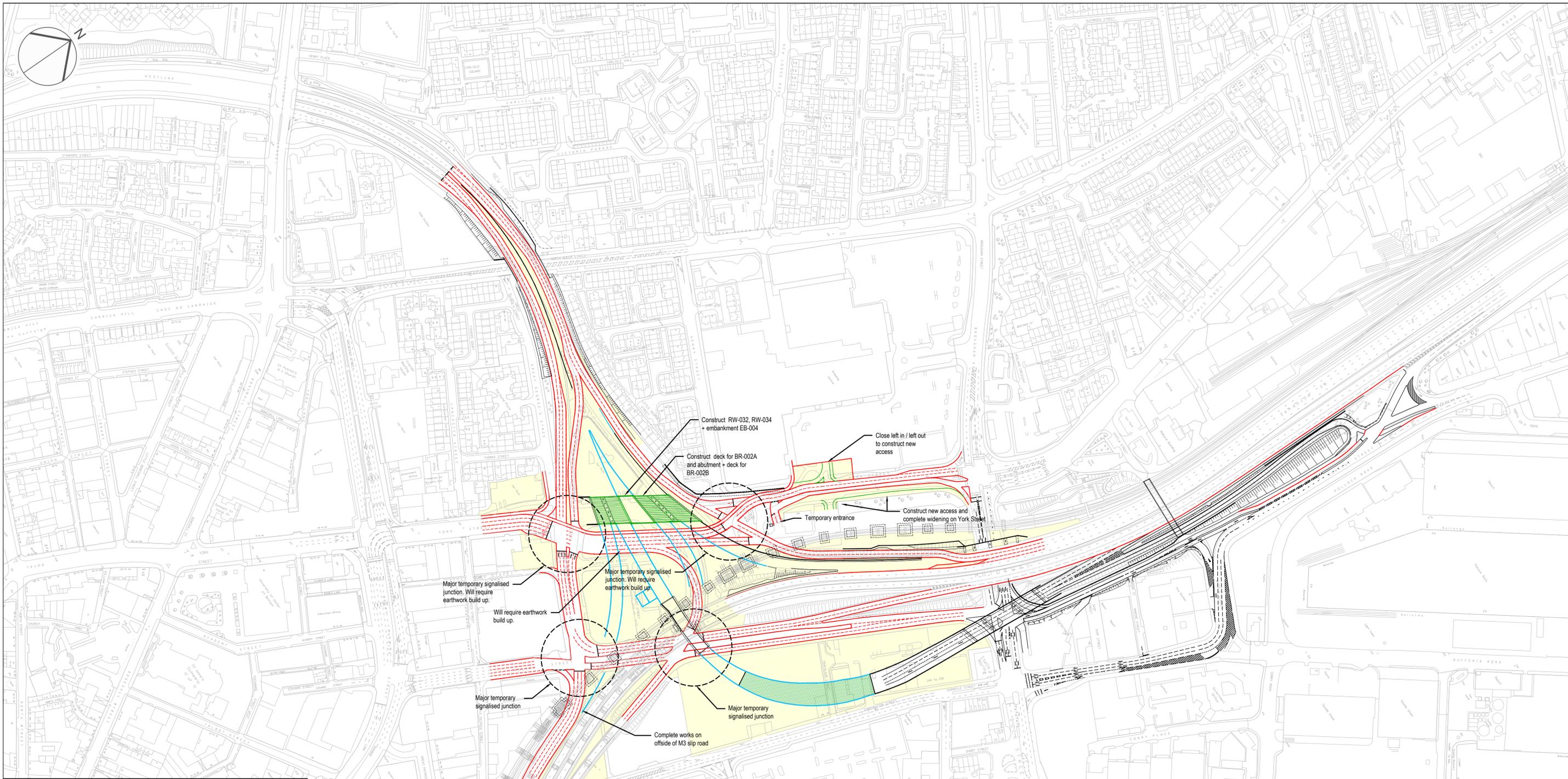
Designed	AN	Drawn	AN	Checked	JMcB	Approved	JMcB	Date	17.07.14
URS Internal Project No.		47037827		Scale @ A1		Zone / Mileage			
1:2000									

17.07.14

URS Infrastructure & Environment UK Limited  
Beechill House  
Beechill Road, Belfast  
BT8 7RP  
Tel: T +44 (0)28 9070 5111  
Fax: F +44 (0)28 9079 9651  
www.urscorp.com

Drawing Number	<b>YSI-URS-XX-XX-DR-RE-TM008</b>	Rev	<b>P1</b>
----------------	----------------------------------	-----	-----------





**WORKS BEING UNDERTAKEN**

1. Construct abutment & deck for BR-002A
2. Construct deck for BR-002B
3. Construct RW-032, RW-034 & embankment EB-004
4. Works on York Street north of BR-002B

ROAD LAYOUT SHOWN IS PRELIMINARY AND SUBJECT TO CHANGE AS PART OF DESIGN DEVELOPMENT

**LEGEND**

	UNDER CONSTRUCTION
	CONSTRUCTION COMPLETED
	CONSTRUCTED TO CUT-OFF LEVEL
	CONING
	TEMPORARY LANE MARKINGS
	WORKS AREA

This material is based upon Crown Copyright and is reproduced with the permission of Land and Property Services under delegated authority from the Controller of Her Majesty's Stationery Office, © Crown Copyright and database rights NIMA ES&LA 214

Unauthorised reproduction infringes © Crown Copyright and may lead to prosecution or civil proceedings

This drawing contains information which is the property of Transport NI. It is furnished in confidence and may not be copied, used or disclosed in whole or in part without prior written consent.

**NOTES**

1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT DOCUMENTATION.
2. DO NOT SCALE FROM THIS DRAWING. USE ONLY PRINTED DIMENSIONS.
3. ALL DIMENSIONS IN MILLIMETRES. ALL CHANGES, LEVELS AND COORDINATES ARE IN METRES UNLESS DEFINED OTHERWISE.
4. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH THE PROJECT HEALTH & SAFETY FILE FOR ANY IDENTIFIED POTENTIAL RISKS.

Additional lanes provided along Great George's Street	AN	JMcB	30/09/14	P1
Revision Details	By	Check	Date	Suffix

**SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION BOX**

IT IS ASSUMED THAT ALL WORKS ON THIS DRAWING WILL BE CARRIED OUT BY A COMPETENT CONTRACTOR WORKING WHERE APPROPRIATE, TO AN APPROPRIATE METHOD STATEMENT.

THIS DRAWING IS TO BE USED ONLY FOR THE PURPOSE OF ISSUE THAT IT WAS ISSUED FOR AND IS SUBJECT TO AMENDMENT.

Purpose of issue

**DRAFT**

Client	Transport NI
--------	--------------

Project Title	York Street Interchange
---------------	-------------------------

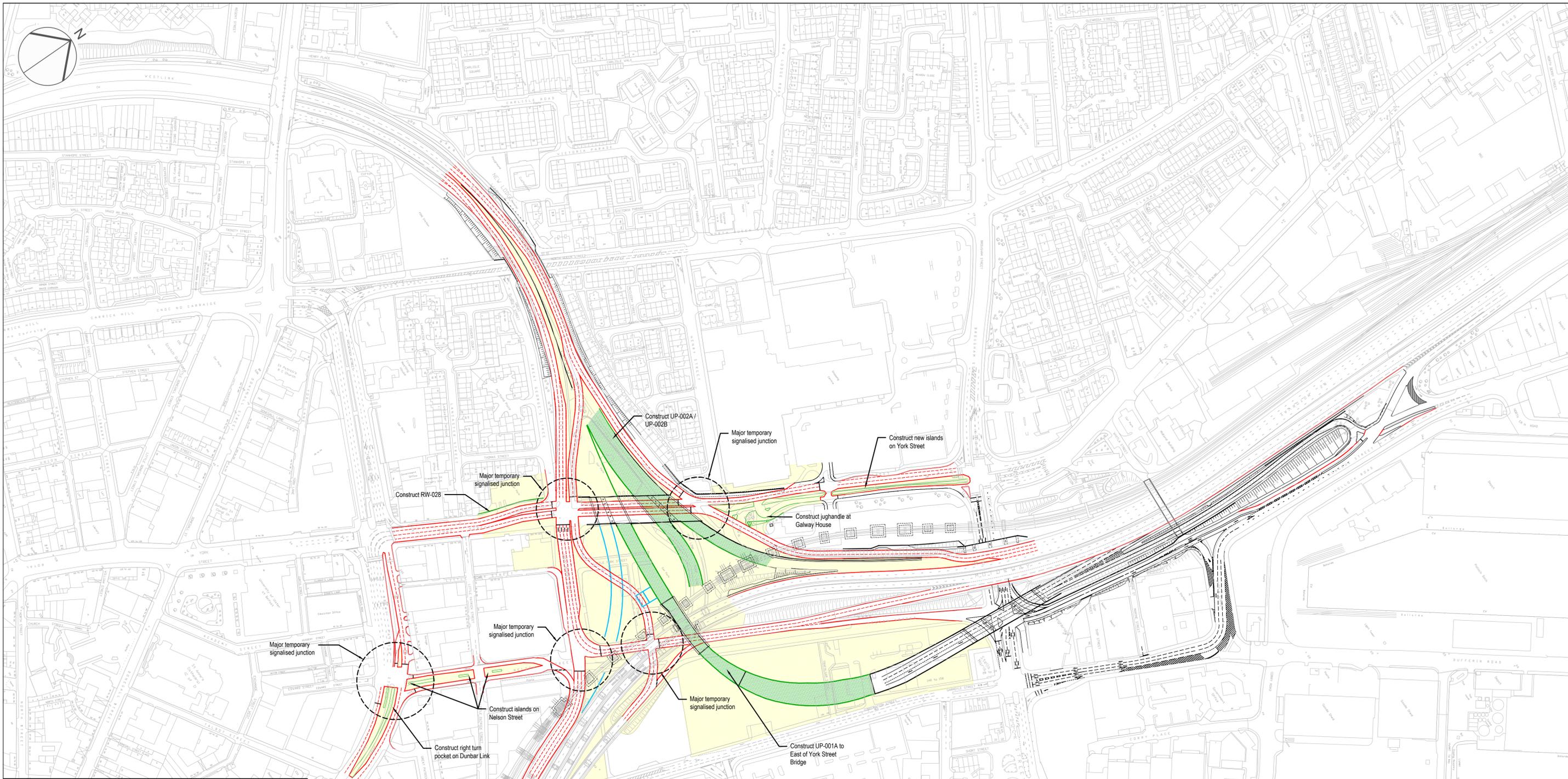
Drawing Title	Temporary Traffic Management
	Phase 9

Designed	Drawn	Checked	Approved	Date
AN	AN	JMcB	JMcB	17.07.14
URS Internal Project No.		Suitability		
47037827				
Scale @ A1	Zone / Mileage			
1:2000				

URS Infrastructure & Environment UK Limited	
Beechill House Beechill Road, Belfast BT8 7RP	
Tel: T +44 (0)28 9070 5111 Fax: F +44 (0)28 9079 9651 www.urscorp.com	
Drawing Number	Rev
YSI-URS-XX-XX-DR-RE-TM009	P1



THIS DOCUMENT HAS BEEN PREPARED PURSUANT TO AND SUBJECT TO THE TERMS OF URS' APPOINTMENT BY ITS CLIENT. URS ACCEPTS NO LIABILITY FOR ANY USE OF THIS DOCUMENT OTHER THAN BY ITS ORIGINAL CLIENT OR FOLLOWING URS' EXPRESS AGREEMENT TO SUCH USE, AND ONLY FOR THE PURPOSES FOR WHICH IT WAS PREPARED AND PROVIDED.



**WORKS BEING UNDERTAKEN**

1. Construct sections of underpass wall for UP-001A
2. Construct UP-001A (partially)
3. Construct remainder of underpass walls for UP-002A & UP-002B
4. Construct UP-002A and UP-002B
5. Construct right-turn pocket on Dunbar Link
6. Construct islands on Nelson Street (south)
7. Construct islands on York Street (north)
8. Construct jughandle at Galway House
9. Construct RW-028



ROAD LAYOUT SHOWN IS PRELIMINARY AND SUBJECT TO CHANGE AS PART OF DESIGN DEVELOPMENT

**LEGEND**

- UNDER CONSTRUCTION
- CONSTRUCTION COMPLETED
- CONSTRUCTED TO CUT-OFF LEVEL
- CONING
- - - TEMPORARY LANE MARKINGS
- WORKS AREA

This material is based upon Crown Copyright and is reproduced with the permission of Land and Property Services under delegated authority from the Controller of Her Majesty's Stationery Office, © Crown Copyright and database rights NIMA ES&LA 214

Unauthorised reproduction infringes © Crown Copyright and may lead to prosecution or civil proceedings

This drawing contains information which is the property of Transport NI. It is furnished in confidence and may not be copied, used or disclosed in whole or in part without prior written consent.

NOTES			
1.	THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT DOCUMENTATION.		
2.	DO NOT SCALE FROM THIS DRAWING. USE ONLY PRINTED DIMENSIONS.		
3.	ALL DIMENSIONS IN MILLIMETRES. ALL CHANGES, LEVELS AND COORDINATES ARE IN METRES UNLESS DEFINED OTHERWISE.		
4.	THIS DRAWING IS TO BE READ IN CONJUNCTION WITH THE PROJECT HEALTH & SAFETY FILE FOR ANY IDENTIFIED POTENTIAL RISKS.		

SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION BOX	
IT IS ASSUMED THAT ALL WORKS ON THIS DRAWING WILL BE CARRIED OUT BY A COMPETENT CONTRACTOR WORKING WHERE APPROPRIATE, TO AN APPROPRIATE METHOD STATEMENT.	
THIS DRAWING IS TO BE USED ONLY FOR THE PURPOSE OF ISSUE THAT IT WAS ISSUED FOR AND IS SUBJECT TO AMENDMENT.	
Purpose of issue	<b>DRAFT</b>

Client	Transport NI
--------	--------------

Project Title	York Street Interchange
---------------	-------------------------

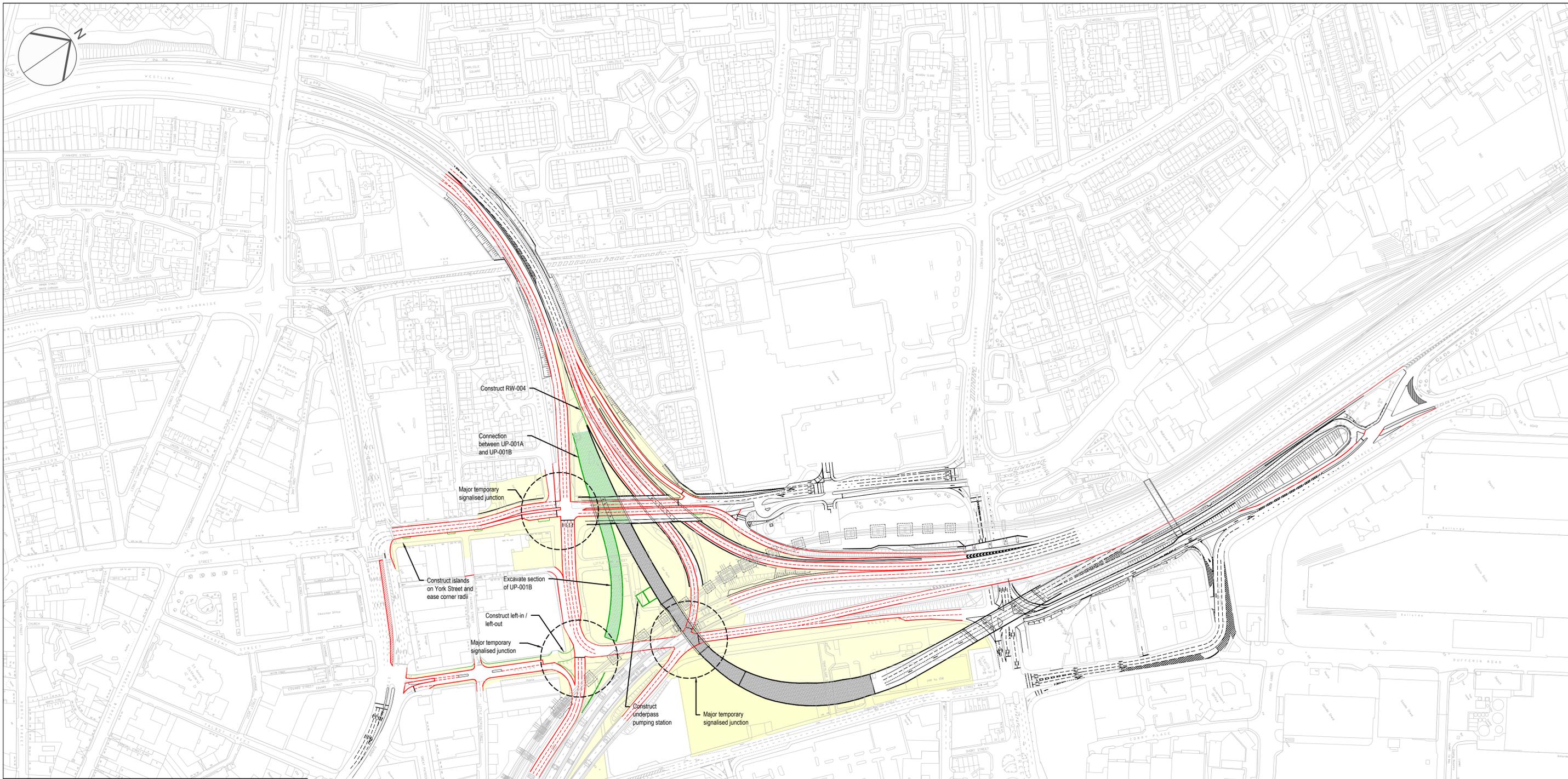
Drawing Title	Temporary Traffic Management
	Phase 10

Designed	AN	Drawn	AN	Checked	JMcB	Approved	JMcB	Date	17.07.14
URS Internal Project No.		47037827		Scale @ A1		Zone / Mileage			
Scale @ A1		1:2000							

URS Infrastructure & Environment UK Limited	
Beechill House Beechill Road, Belfast BT8 7RP	
Tel: +44 (0)28 9070 5111 Fax: +44 (0)28 9079 9651 www.ursi.com	
Drawing Number	YSI-URS-XX-XX-DR-RE-TM010
Rev	P1



THIS DOCUMENT HAS BEEN PREPARED PURSUANT TO AND SUBJECT TO THE TERMS OF URS' APPOINTMENT BY ITS CLIENT. URS ACCEPTS NO LIABILITY FOR ANY USE OF THIS DOCUMENT OTHER THAN BY ITS ORIGINAL CLIENT OR FOLLOWING URS' EXPRESS AGREEMENT TO SUCH USE, AND ONLY FOR THE PURPOSES FOR WHICH IT WAS PREPARED AND PROVIDED.



**WORKS BEING UNDERTAKEN**

1. Construct sections of UP-001A & UP-001B (connection between the two underpasses)
2. Construct sections of underpass pumping station
3. Construct islands etc on Nelson Street
4. Construct islands etc on York Street
5. Construct RW-004
6. Excavate section of UP-001B

 ROAD LAYOUT SHOWN IS PRELIMINARY AND SUBJECT TO CHANGE AS PART OF DESIGN DEVELOPMENT

**LEGEND**

	UNDER CONSTRUCTION
	CONSTRUCTION COMPLETED
	CONSTRUCTED TO CUT-OFF LEVEL
	CONING
	TEMPORARY LANE MARKINGS
	WORKS AREA

This material is based upon Crown Copyright and is reproduced with the permission of Land and Property Services under delegated authority from the Controller of Her Majesty's Stationery Office, © Crown Copyright and database rights NIMA ES&LA 214

Unauthorised reproduction infringes © Crown Copyright and may lead to prosecution or civil proceedings

This drawing contains information which is the property of Transport NI. It is furnished in confidence and may not be copied, used or disclosed in whole or in part without prior written consent.

**NOTES**

1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT DOCUMENTATION.
2. DO NOT SCALE FROM THIS DRAWING. USE ONLY PRINTED DIMENSIONS.
3. ALL DIMENSIONS IN MILLIMETRES. ALL CHANGES, LEVELS AND COORDINATES ARE IN METRES UNLESS OTHERWISE SPECIFIED.
4. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH THE PROJECT HEALTH & SAFETY FILE FOR ANY IDENTIFIED POTENTIAL RISKS.

Additional lanes provided along Great George's Street	AN	JMcB	30/09/14	P1
Revision Details	By	Check	Date	Suffix

**SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION BOX**

IT IS ASSUMED THAT ALL WORKS ON THIS DRAWING WILL BE CARRIED OUT BY A COMPETENT CONTRACTOR WORKING WHERE APPROPRIATE, TO AN APPROPRIATE METHOD STATEMENT.

THIS DRAWING IS TO BE USED ONLY FOR THE PURPOSE OF ISSUE THAT IT WAS ISSUED FOR AND IS SUBJECT TO AMENDMENT.

Purpose of issue

**DRAFT**

Client

**Transport NI**

Project Title

**York Street Interchange**

Drawing Title

**Temporary Traffic Management**

**Phase 11**

Designed	Drawn	Checked	Approved	Date
AN	AN	JMcB	JMcB	17.07.14
URS Internal Project No.		Suitability		
47037827				
Scale @ A1	Zone / Mileage			
1:2000				

URS Infrastructure & Environment UK Limited

Beechill House  
Beechill Road, Belfast  
BT8 7RP

Tel: T +44 (0)28 9070 5111  
Fax: F +44 (0)28 9079 9651  
www.urscorp.com

**URS**

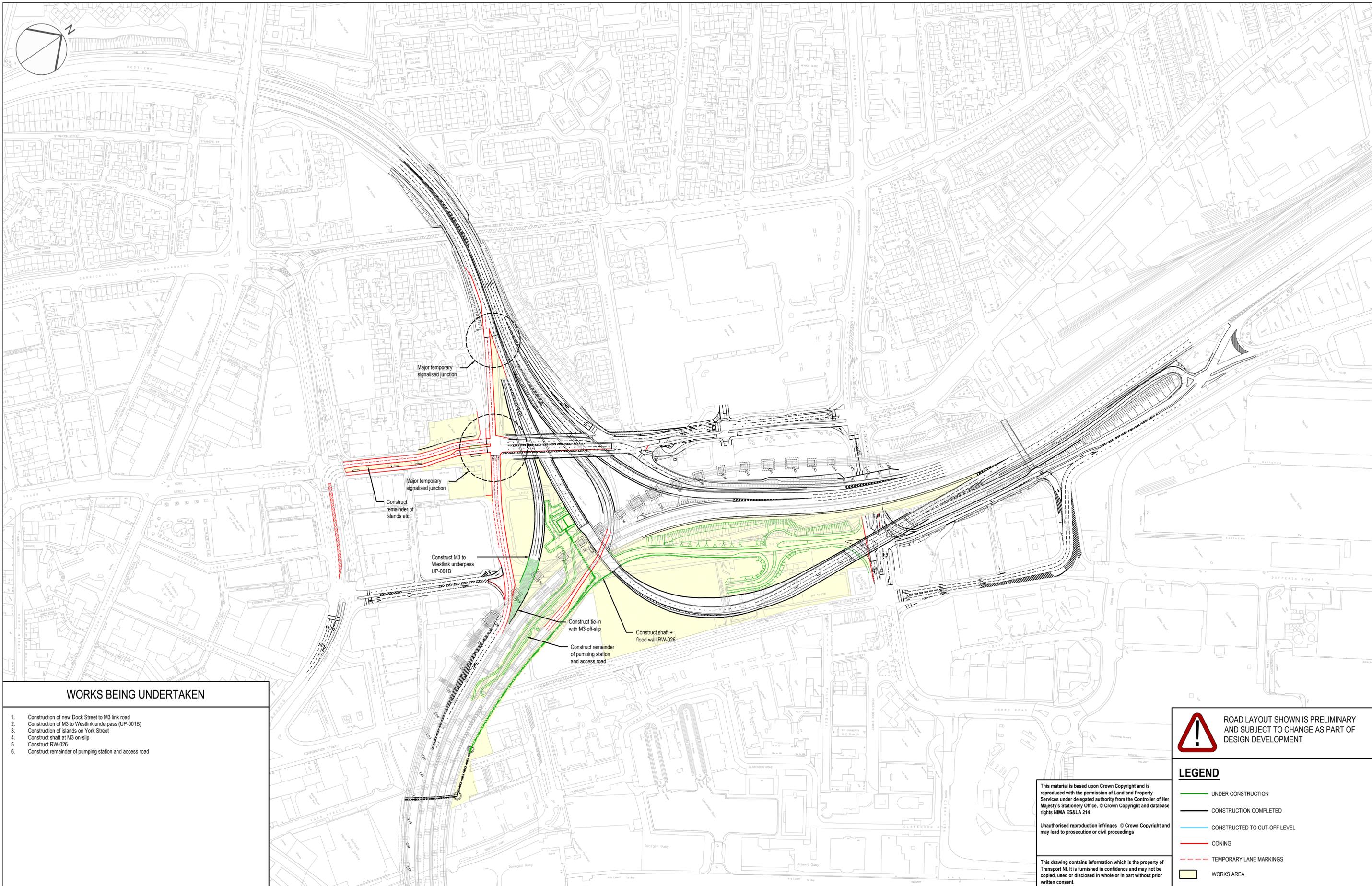
Drawing Number

**YSI-URS-XX-XX-DR-RE-TM011**

Rev

**P1**

THIS DOCUMENT HAS BEEN PREPARED PURSUANT TO AND SUBJECT TO THE TERMS OF URS' APPOINTMENT BY ITS CLIENT. URS ACCEPTS NO LIABILITY FOR ANY USE OF THIS DOCUMENT OTHER THAN BY ITS ORIGINAL CLIENT OR FOLLOWING URS' EXPRESS AGREEMENT TO SUCH USE, AND ONLY FOR THE PURPOSES FOR WHICH IT WAS PREPARED AND PROVIDED.



**WORKS BEING UNDERTAKEN**

1. Construction of new Dock Street to M3 link road
2. Construction of M3 to Westlink underpass (UP-001B)
3. Construction of islands on York Street
4. Construct shaft at M3 on-slip
5. Construct RW-026
6. Construct remainder of pumping station and access road



ROAD LAYOUT SHOWN IS PRELIMINARY AND SUBJECT TO CHANGE AS PART OF DESIGN DEVELOPMENT

**LEGEND**

- UNDER CONSTRUCTION
- CONSTRUCTION COMPLETED
- CONSTRUCTED TO CUT-OFF LEVEL
- CONING
- - - TEMPORARY LANE MARKINGS
- WORKS AREA

This material is based upon Crown Copyright and is reproduced with the permission of Land and Property Services under delegated authority from the Controller of Her Majesty's Stationery Office. © Crown Copyright and database rights NIMA ES&LA 214

Unauthorised reproduction infringes © Crown Copyright and may lead to prosecution or civil proceedings

This drawing contains information which is the property of Transport NI. It is furnished in confidence and may not be copied, used or disclosed in whole or in part without prior written consent.

NOTES			
1.	THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT DOCUMENTATION.		
2.	DO NOT SCALE FROM THIS DRAWING. USE ONLY PRINTED DIMENSIONS.		
3.	ALL DIMENSIONS IN MILLIMETRES. ALL CHANGES, LEVELS AND COORDINATES ARE IN METRES UNLESS DEFINED OTHERWISE.		
4.	THIS DRAWING IS TO BE READ IN CONJUNCTION WITH THE PROJECT HEALTH & SAFETY FILE FOR ANY IDENTIFIED POTENTIAL RISKS.		

SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION BOX	
IT IS ASSUMED THAT ALL WORKS ON THIS DRAWING WILL BE CARRIED OUT BY A COMPETENT CONTRACTOR WORKING WHERE APPROPRIATE, TO AN APPROPRIATE METHOD STATEMENT.	
THIS DRAWING IS TO BE USED ONLY FOR THE PURPOSE OF ISSUE THAT IT WAS ISSUED FOR AND IS SUBJECT TO AMENDMENT.	
Purpose of issue	<b>DRAFT</b>

Client	Transport NI
--------	--------------

Project Title	York Street Interchange
---------------	-------------------------

Drawing Title	Temporary Traffic Management Phase 12
---------------	--

Designed	AN	Drawn	AN	Checked	JMcB	Approved	JMcB	Date	17.07.14
URS Internal Project No.		47037827		Scale @ A1		Zone / Mileage		1:2000	

URS Infrastructure & Environment UK Limited	
Beechill House Beechill Road, Belfast BT8 7RP	
Tel: T: +44 (0)28 9070 5111 Fax: F: +44 (0)28 9079 9651 www.urscorp.com	
Drawing Number	YSI-URS-XX-XX-DR-RE-TM012
Rev	P1



THIS DOCUMENT HAS BEEN PREPARED PURSUANT TO AND SUBJECT TO THE TERMS OF URS' APPOINTMENT BY ITS CLIENT. URS ACCEPTS NO LIABILITY FOR ANY USE OF THIS DOCUMENT OTHER THAN BY ITS ORIGINAL CLIENT OR FOLLOWING URS' EXPRESS AGREEMENT TO SUCH USE, AND ONLY FOR THE PURPOSES FOR WHICH IT WAS PREPARED AND PROVIDED.



