

The background is a vibrant red color. It is decorated with several abstract geometric shapes: a large white circle with a blue border in the upper right; a smaller white circle with a blue border in the lower left; a large teal shape with a white border in the bottom right; and various other shapes in blue, green, and white scattered throughout the corners and edges.

**Appendix F**  
Existing Structures Study



# Structural Audit Report

Route 06 – Lucan to City Centre  
BCIDA – ACM – STR\_ZZ-0006\_XX\_00-RP-SS-0001

Client - National Transport Authority  
Stage - Stage 2

Project reference: BusConnects Package A  
Project number: 60599123  
BCIDA – ACM – STR\_ZZ-0006\_XX\_00-RP-SS-0001

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# 1. Introduction

AECOM have been commissioned by the National Transport Authority (NTA) to carry out a Structural Assessment of structures across Core Bus Corridor (CBC) routes as per Section 3.18 in the 'Tender and Schedule' which states:

*'The ED shall compile an inventory of all structures (buildings including boundary walls/fences, bridges, culverts, retaining walls, manholes, and any other relevant structures) on the route of the Scheme and those crossing the Scheme. The ED shall determine any structural design requirements for the Scheme and shall design all structures required for the Scheme in accordance with the relevant standards and in accordance with good industry practice.'*

*'The ED shall inspect all relevant existing structures and, following such inspection, shall identify those structures requiring a structural assessment to ensure that they can safely accommodate a revised lane configuration. Due to the proximity of the Scheme improvements to residential and business properties this shall include requirements for a property structural condition survey. In respect of those identified structures, the ED shall carry out a structural assessment in accordance with good engineering practice and shall either confirm the adequacy of the structure to accommodate the Scheme or shall identify and design any remedial or replacement works necessary to meet the Scheme requirements.'*

This report is a desktop inventory of existing structures along the Lucan to City Centre route and looks at the likely impact of the proposed scheme on the structures within the proposed scheme extents, or adjacent to the permanent or likely temporary works. This report does not capture the structural assessment of the individual structures affected by the proposed works, which will be captured separately when the design of the proposed works has sufficiently progressed.

## 2. Project Overview

The Lucan to City Centre Core Bus Corridor (CBC) commences at Junction 3 on the N4 and it is routed via the N4 as far as Junction 7 (M50), and via the R148 along the Chapelizod Bypass, Con Colbert Road, St John's Road West and Frank Sherwin Bridge, where it will join the prevailing traffic management regime on the North Quays.

Cycle facilities are provided along the length of the corridor between Junction 3 and Chapelizod village (following Primary cycle route 6 of the GDA's Cycle Network Plan), at which point they will connect with other future cycle route schemes. Along this section of the corridor a segregated 2-way cycle track is provided running parallel to the Eastbound carriageway, then following Old Lucan Road providing off-line facilities and traffic calming measures to improve the safety of cyclists. Cycle facilities are also provided between Con Colbert Road and the end of the corridor at Heuston station, with single cycle lanes running down both the east and west bound carriageway physically segregated from other lanes of traffic.

Priority for buses is provided along the entire route, consisting primarily of dedicated bus lanes in both directions, with alternative measures proposed at particularly constrained locations. The layouts of all junctions along the corridor have been modified to include improved cycle provision and safety.

It should be noted the road networks on the scheme fall under the jurisdiction of both Transport Infrastructure Ireland (TII) for national road networks, and the regional councils (Dublin City Council and South Dublin County Council) for regional road networks. For CBC Lucan to City centre the N4 (Sheets 01-11) is under the jurisdiction of TII, and the remainder of the scheme is under the jurisdiction of either South Dublin County Council (Sheets 11-16), and Dublin City Council ( Sheets 16-31).

### 3. Methodology – Desktop Study

The initial stage employed the topographical survey to identify the critical structural infrastructure along the routes. Structures identified in the topographical survey were highlighted and given a line type to denote their classification. Table 2 provides the lists of data that was to be sourced as part of the study from the topographical survey. The structures identified from the topographical survey study are presented in the drawing series in Table 1.

Figure 1 is the key used to classify the structures identified.

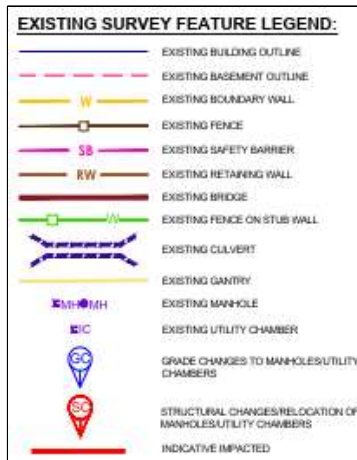


Figure 1 - Structural Assessment Drawing Key

Upon completion of this task a virtual walk through using Google Earth was used to verify the accuracy of the topographical survey & identify any errors, e.g. the mislabelling of structures or any missing structures.

Once an accurate record of the structures along the routes was established, an assessment of the impact of the proposed CBC could be made by overlaying the proposed scheme on top of the identified structures. This clearly showed the impact on above ground structures; however, reviewing structural records/ undertaking further investigations may be required to fully understand the impact of the scheme on the structure foundations. The impact on manholes and utility chambers has also been identified, assessing whether the impact is a:

- Grade change (a change in the existing level);
- Structural change (a change in the loading, e.g. pedestrian footway to bus lane); or
- Relocation of the manhole/inspection chamber.

Table 1 - Drawing No

Drawing No	Drawing Title
BCD-0000-STR_ZZ-06_XX_0000-DR-CR-0001	Route 06 Lucan to City Centre Structural Assessment Plan – Sheets 1 to 31

**Table 2 – Structure Classification**

Element	Classification
Building Structures	<ul style="list-style-type: none"> <li>Property boundaries</li> <li>Basement boundaries</li> <li>Culverts &amp; headwalls</li> </ul>
Walls/Fences	<ul style="list-style-type: none"> <li>Walls</li> <li>Retaining walls</li> <li>Fences on stub walls</li> <li>Fences</li> </ul>
Safety Barriers	<ul style="list-style-type: none"> <li>Concrete and steel road safety barriers</li> </ul>
Existing Bridges	<ul style="list-style-type: none"> <li>Bridge deck extents and accompanying Retaining Structures</li> </ul>
Gantry Structures	<ul style="list-style-type: none"> <li>Gantry columns and gantry extents</li> </ul>
Manholes	<ul style="list-style-type: none"> <li>Utility chambers</li> <li>Drainage manholes</li> </ul>

## 4. Existing Structures

### 4.1 Building Structures

#### 4.1.1 Property Boundaries

The Lucan to City Centre route has limited impact on property boundaries .

Possible conflicts occur at fifteen locations detailed below and shown in the drawing set BCD-0000-STR\_ZZ-06\_XX\_0000-DR-CR-0001;

- Sheets 01 & 02 – Ardenode Stud, Ballymore Eustace – Property boundary to be relocated.
- Sheet 02 – Parking area of former Foxhunter site (now closed) – Property boundary to be relocated.
- Sheet 03 – 8 Hermitage Way – Possible property boundary relocation.
- Sheets 03 & 04 – Hermitage Golf Club – Boundary wall to be set back.
- Sheet 04 – The Bungalow, Hermitage Golf Club – Possible property boundary relocation.
- Sheet 04 – Sureweld International Ltd. – Boundary wall to be relocated.
- Sheets 04 & 05 – Hermitage Medical Clinic – Property boundary to be relocated.
- Sheet 07 – Deadman’s Inn – Access ramp along Old Lucan Road may require to be reconfigured.
- Sheet 08 – Block B, Liffey Valley Office Campus – Possible property boundary relocation.
- Sheet 14 – Palmerstown Lodge – Private parking to be impacted and boundary wall to be set back.
- Sheet 14 – 20 Kennelsfort Road Lower – Private parking to be impacted and boundary wall to be set back.
- Sheet 15 – Palmerstown Service Station – Boundary wall to be set back.

- Sheet 30 – EIR Building – Planters, steps and ramps need to be reconfigured or removed to facilitate the proposed alignment.
- Sheet 30 – HSQ Building – Minor impact on entrance to facilitate the proposed alignment.
- Sheet 31 – HSE, Dr.Steeven’s Hospital – Property boundary to be relocated.

## 4.1.2 Basement Boundaries

Basement boundaries along the route are present in several locations listed below with no foreseen impacts at these sites. Basement extents have been identified from planning records and Irish Rail records as detailed below and shown in the drawing set BCD-0000-STR\_ZZ-06\_XX\_0000-DR-CR-0001;

- Sheet 30 - EIR Building (Planning reference – 1501/08).
- Sheet 30 – HSQ Building (Planning Reference – 2774/14).
- Sheets 30 & 31 – Heuston Station.

The potential impact on the basements on the scheme need to be verified when the design has been further progressed.

## 4.1.3 Culverts

The River Cammock culvert traverses St Johns Road West, passing under Heuston Station, discharging to the River Liffey north of Heuston Station.

The potential impact on the culvert running under the scheme needs to be verified when the design has been further progressed.

## 4.2 Walls & Fences

### 4.2.1 Boundary Walls and Fences

A review of the topographical survey and google earth have identified many types of boundary structures, notably boundary walls, fences, acoustic fences and fences on stub walls. The assessment has identified if the structure will need to be removed or replaced to accommodate the proposed works.

### 4.2.2 Retaining Walls

Retaining walls impacted by the proposed works are detailed below and shown in the drawing set BCD-0000-STR\_ZZ-06\_XX\_0000-DR-CR-0001:

- Sheet 08 – Relocation of bus stops and proposed footbridge impacts a length of reinforced earthworks on the south side of the N4. The full impact on the structures is yet to be determined and subject to further discussion.
- Sheet 10 – Widening of carriageway to accommodate the new alignment where the M50 slip joins with the R148 (N4) W/B – impacts overbridge wingwalls. Also potentially impacted at this location will be a length of reinforced earthworks along the eastbound R148. The full impact on the structures is yet to be determined and subject to further discussion.
- Sheet 28 – Staircase on north east of South Circular Road junction to be potentially reconfigured to accommodate the proposed new alignment. [Trying to design out].
- Sheet 29 – Low angled concrete retaining wall along R148 median to be altered to accommodate the proposed new alignment.
- Sheet 29 – Low concrete retaining wall located in the R148 median to be relocated or removed to accommodate the proposed new alignment.
- Sheet 30 – Retaining walls around the EIR building for the elevated circulation area to be reconfigured to accommodate the proposed new alignment.

## 4.3 Safety Barriers

Safety barriers across the scheme include both single and double-sided steel safety barriers and concrete safety barriers. These safety barriers are located both in the median and at the carriageway edge with appropriate setbacks. Where required to widen or reconfigure the current roadway assignment, the safety barrier requirement will have to be revisited to assess the requirements of the proposed configuration.

## 4.4 Existing Bridges

The majority of bridges across the scheme will remain unaffected by the proposed changes along the route, however the following bridges will be impacted by the proposed changes as detailed below and shown in the drawing set BCD-0000-STR\_ZZ-06\_XX\_0000-DR-CR-0001;

- Sheet 04 - Pedestrian footbridge over the N4 to possibly provide a cycle track tie-in to the intermediate landing.
- Sheet 09 – Liffey Valley Footbridge to be removed in whole or in part, with signage possibly added.
- Sheet 10 – The scheme proposes an extra lane of traffic over the N4/R148 W/B Underbridge.
- Sheet 14 – Kennelsfort Road/R148 Pedestrian Bridge - proposed changes to the existing ramps.

A review of structural as-built records/ follow up surveys will be required to understand and mitigate the impact on the structures and associated substructures.

## 4.5 Gantry Structures

Gantry structures are generally located along the N4 with several structures located near Palmerstown on the R148. Gantry structures include both cantilever structures and portal structures spanning the carriageway with both sheet signage and Intelligent Transport System (ITS) signage. The impacted gantry structures and current implications are listed below. However, the design is to be refined to mitigate / remove these impacts where possible. Impacted gantry structures are detailed below and shown in the drawing set BCD-0000-STR\_ZZ-06\_XX\_0000-DR-CR-0001:

- Sheet 02 – W/B cantilever gantry may require relocation but TBC.
- Sheet 03 – E/B cantilever gantry to be removed and replaced, offset from proposed carriageway.
- Sheet 04 – E/B cantilever gantry to be relocated or the proposed design is to be amended to facilitate the gantry.
- Sheet 06 – Portal gantry spanning carriageway to have signage replaced.
- Sheet 07 – Portal gantry spanning E/B carriageway to have signage replaced.
- Sheet 08 – Portal gantry spanning E/B carriageway to have signage replaced.
- Sheet 09 – Portal gantry spanning E/B carriageway to have signage replaced.
- Sheet 14 – Portal gantry spanning W/B carriageway to have signage replaced.

## 4.6 Manholes

Manholes and utility chambers are located throughout the scheme. The impact on the manholes and utility chambers has been identified, assessing whether the impact is:

- Grade change (a change in the existing level); or
- Structural change ( a change in the loading, e.g. pedestrian footway to bus lane); or
- Required relocation of the manhole/inspection chamber.



