14 TRAFFIC AND TRANSPORT

14.1 Introduction

This chapter was prepared by Nicholas O' Dwyer Ltd. and considers the likely traffic and transport impacts associated with the construction and operation of the proposed River Poddle Flood Alleviation Scheme. After setting out the methodology to be followed, this chapter describes the existing environment and the main works in the proposed Flood Alleviation Scheme that are of relevance to roads and traffic. The chapter then presents a consideration of the likely significant impacts of the proposed scheme on traffic and the transport and the measures proposed where necessary to mitigate the impacts, and any residual impacts.

The dominant traffic impact will be during the construction stage. The operational stage will have no discernible increase in traffic from Council and OPW staff who will carry out maintenance checks and works. This will approximate the current situation. Therefore, the assessment focuses on the traffic impacts associated with the construction phase of the proposed project.

The substantial works proposed as part of the Scheme will be at three locations: Tymon Park, Whitehall Park / Wainsfort Manor Crescent, and Ravensdale Park. These locations will require access from the public roads for Heavy Construction Vehicles (HCVs) and Heavy Goods Vehicles (HGVs) for the duration of the works as described in the sections below. There will be no exceptional loads. Other works will involve the construction of new walls or the replacement or reinforcement of existing walls in multiple points along the River. These works areas will be accessed by small teams of workers who will park equipment and trailers either within a works/set down area or on the public roads nearby. Some works will require access to private property. The remainder of the works to seal manholes will be primarily within public roads. The estimated duration of construction for the project is 24 months overall.

14.2 Statement of Authority

The Traffic and Transport Impact Assessment of the EIAR for the River Poddle Flood Alleviation Scheme has been prepared by Graham Young. Graham Young is a senior engineer of the civil and structural consultancy, Nicholas O'Dwyer Ltd. Graham Young's areas of professional expertise are in pipeline and roads civil works design, including traffic and transport impact assessment and mitigation design. Graham Young has over 23 years of civil consultancy experience. Graham is a Chartered member of Engineers Ireland, with a bachelor's degree in Engineering (Civil, Structural and Environmental), and a postgraduate Diploma in Project Management. Graham has attended the National Roads Authority (NRA) three-day Road Safety Audit course.

14.3 Transport Assessment Methodology

14.3.1 Guidelines

This traffic and transport impact assessment has been prepared with reference to the following documents:

- Guidelines on the information to be contained in Environmental Impact Assessment Reports – Environmental Protection Agency (Draft 2017)
- Project Appraisal Guidelines for National Roads – Transport Infrastructure Ireland (2016)
- EPA: Revised Guidelines on the Information to be contained in Environmental
- Impact Statements, (2002 and Draft, September 2015)
- EPA: Advice Notes for Preparing Environmental Impact Statements, (2003 and Draft, September 2015)
- Traffic and Transport Assessment Guidelines – NRA (2014)

14.3.2 Methodology

The methodology for the traffic and transport assessment can be summarised as follows:

- Inspection of the existing roads and environments at the proposed access locations
- Determination of construction phase traffic generated by the proposed works
- Identification of the impacts during the construction phase and assessment of significance of those impacts
- Proposed mitigation measures to remove and/or reduce any identified negative traffic impacts
- Determine any residual impacts arising after application of proposed mitigation measures

14.3.3 Assumptions

The dominant traffic impact will be during the construction stage. The operational stage will have no discernible increase in traffic from Council and OPW staff who will carry out maintenance checks and works. This will approximate the existing site traffic. Therefore, the assessment focuses on the traffic impacts on the public road network associated with the construction phase of the proposed project.

It is intended where possible to reuse arisings for site restoration and as fill materials to construct the embankments, subject to testing. For determination of the worst-case impact, it is assumed in this assessment that 50% of materials for construction of the embankments must be imported *via* the public road network. The remainder of arisings on site are deemed surplus or unsuitable and must be disposed to appropriate licenced facilities. For material that cannot be reused on site, where feasible its export will be co-ordinated with deliveries of imported fill in order to minimise traffic movements.

Due to the nature of the sites being within public spaces in an urban setting where space is limited, it is intended that materials required for the works will not be stockpiled on the sites but will be delivered in the quantities as required. As a consequence of this method of work, the traffic associated with the construction phase is expected to be a relatively steady stream over the duration. For determination of the worst-case impact, it is

considered in this assessment that the deliveries can peak to twice the averaged daily requirement of construction materials.

It is considered that the main transport effects will be associated with the movement and turning of HCVs into the works sites as described above. The effect of light vehicle movements will be low when compared to the background level of light vehicle traffic. However, for completeness, the impact of light vehicles is also considered in this assessment.

The numbers of construction workers will vary over the construction period due to the phasing of the works. However, based on similar developments, it is estimated that the number of workers will peak at approximately 30 in any one day at the large sites, and up to 12 at the smaller wall construction sites. Assuming 2 occupants per car/van this equates to a total of 10 to 15 light vehicle trips to Tymon Park or Ravensdale Park, and 5 to 6 trips to the smaller sites.

As described above, the maximum volume of HCVs and light vehicles are likely to be generated during the movement of material to and from the sites to construct the earthen embankments and landscaping.

14.3.4 Impact Assessment Methodology

The significance of effects on traffic and transport as presented in this Chapter of the EIAR has been assessed based on the criteria presented in **Table 14-1**. It is based on the projected change in prevailing travel conditions which has regard to the EPA draft guidance referenced above and based on the professional judgement of the author who has 23 years' experience in undertaking traffic and transportation assessments.

Table 14-1: Assessment Criteria

Significance of Effects	Criteria
Imperceptible	No perceived impact on prevailing travel conditions
Not Significant	A small change in traffic flows without causing a real change in travel conditions
Slight Effects	A change in traffic flow resulting in a minor change in travel conditions
Moderate Effects	A change in traffic flows resulting in a modest change in travel conditions
Significant Effects	A marked change in travel conditions resulting in long delays to traffic

Significance of Effects	Criteria
Very Significant Effects	A significant change in travel conditions resulting in very long delays to traffic
Profound Effects	A major change in travel conditions resulting in the breakdown in traffic flow and significant delays to traffic

14.4 Existing Environment

This section of the chapter lists the main transport routes which could potentially be affected by the proposed works.

14.4.1 Site Location

The works in the proposed Flood Alleviation Scheme are located in several areas along and adjacent the River Poddle from Tymon North, Tallaght to Mt. Argus, Harold's Cross. Additional works to seal manholes are proposed within public roads in Ravensdale Park, Harold's Cross, St. Teresa's Gardens and Donore Avenue, and at the National Stadium, South Circular Road in Merchant's Quay, Dublin.

The road network to be utilised during the construction phase of the project is shown on **EIAR Volume 3.**

14.4.2 Wider Road Network

A brief description of the wider road network including major roundabouts, Regional Roads, National Primary Roads and Motorways in proximity to sites in the proposed development is provided below.

14.4.2.1 N81 Blessington Road / Tallaght Bypass

The N81 is the arterial route between Wicklow, Tallaght, Templeogue, Terenure, Harold's Cross and Dublin City Centre. It is approximately 1.5km south of the works at Tymon Park, and 1km from the other works sites along the Poddle. The transport of materials to and from the site is likely to be the N81, coming from the M50 motorway, as the quarries and landfill in closest proximity to the project are in Wicklow and Kildare.

14.4.2.2 R819 Greenhills Road

The R819 Greenhills Road is the link from the N81 near Tallaght to the Walkinstown roundabout. It is approximately 0.6km north of the works at Tymon Park.

14.4.2.3 Walkinstown Roundabout

Walkinstown roundabout provides connection to the following destinations / routes:

- Ballymount, *via* L4005 Ballymount Road

- Bluebell / R810 Naas Road / R110 Longmile Road (R110), *via* R112 Walkinstown Avenue
- Crumlin Children's Hospital / R110 Longmile Road / Dolphins Barn, *via* R819 Walkinstown Road
- Terenure / Kimmage / Crumlin, *via* R818 Kimmage Road West
- Templeogue / Perrystown, via R112 Peters Road / Greentrees Road

The roundabout is *ca.* 2.4km from the works at Tymon Park (north) and *ca.* 1.6km from the works at Whitehall Park.

14.4.3 Local Road Network

A brief description of the local road network in the vicinity of sites in the proposed development is provided below.

14.4.3.1 Tymon North (Tymon Park west of M50)

The L3036 Castletymon Road links the N81 near Balrothery to the R819 Greenhills Road near Kilnamanagh. The works at Tymon North (Tymon Park west of M50) will be accessed off this road *via* a gated entrance to Tymon Park which has public parking and a roundabout. This entrance is *ca.* 650m from the junction with Greenhills Road and *ca.* 1.5km from the roundabout on the N81.

14.4.3.2 Tymon Park (East of M50)

The L4013 Limekiln Road links the L4019 Wellington Road and R819 Greenhill Road. The works at Tymon Park will be accessed from a temporary entrance off this road. There is a school on this road approximately 350m east, and a public car park for Tymon Park approximately 400m west of the proposed temporary works entrance.

14.4.3.3 Whitehall Park / Wainsfort Manor Crescent

The R112 Templeville Road links the Walkinstown roundabout and Templeogue. The works at the public open space in Whitehall Park will be accessed from Templeville Road.

The R817 Wainsfort Road links Templeogue and the R112 to Kimmage and the R818. The works to be carried out the rear gardens of properties on Whitehall Road and Glendale Park will be from the opposite bank, accessed from the public open space at Wainsfort Manor Crescent. Access to this works area will be from Wainsfort Manor Drive, a residential road in an estate accessed from Wainsfort Road (R817).

14.4.3.4 Rear of Fortfield Road (south of Kimmage Cross Roads)

The R818 Kimmage Road West links Crumlin and the Walkinstown roundabout to the R817 and to Terenure. The proposed access to the river to undertake these works will be from a gated access to a private lane off Kimmage Road West, *ca.* 35m from the Kimmage Cross Roads (KCR) junction. A one-way system of traffic will operate where vehicles will exit from the site via the private lane, entering on to Fortfield Road adjacent to the An Post Delivery Office.

14.4.3.5 Ravensdale Park

The R817 Kimmage Road Lower is the extension of Wainsfort Road and links KCR (R818) to Harold's Cross. The works area at Ravensdale Park, including the works to the manholes at Ravensdale and Poddle Park, will be accessed from the R817.

Construction access to the Park is proposed from Ravensdale Park, *ca.* 25m from the junction with Poddle Park, and *ca*. 40m from the junction with Kimmage Road Lower (R817). The works to replace the footbridge and reinforce the wall to the south of the footbridge will require access through residential areas at Ravensdale Park and from Ravensdale Drive where there is a builders' providers.

14.4.3.6 St. Martin's Drive

Access to the works will be from St. Martin's Drive, which is a residential cul-de-sac accessed from Kimmage Road Lower (R817).

14.4.3.7 Mt. Argus Close

Access to the works will be from Mount Argus Close, a residential cul-de-sac accessed from Kimmage Road Lower (R817).

14.4.3.8 St. Teresa's Gardens and Donore Avenue

Donore Avenue in Dublin 8 links the R818 South Circular Road and Parnell Road on the Grand Canal to Cork Street. The manhole works will be located at various junctions on this road may be arranged to the adjacent streets and may add between 500m and 900mm distance to a journey.

14.4.3.9 National Stadium

Minor works are proposed to replace and widen a manhole cover at the rear car park of the National Stadium on South Circular Road.

14.4.4 Public Transport

Dublin Bus routes pass most works locations as follows:

- Castletymon Road: Route 77a
- Limekiln Road: Route 15a
- Templeville Road: Route 54a
- Wainsfort Road: Route 54a
- Kimmage Road West: Routes 9, 15a, 17
- Kimmage Road Lower: Routes 9, 54a

The locations of bus stops in proximity to the works areas are shown on **EIAR Volume 3.**

14.5 Characteristics of the Proposed Development

The following sections describe the works proposed for each location, the proposed access routes, the quantities and types of materials expected to be brought to or removed from

the works areas, and from that an estimation of the number of vehicle movements projected to be generated at each location.

14.5.1 Works to Tymon North (Tymon Park west of M50)

Proposed works at this location include removal of trees from the works areas, the removal of excavated earth and the import of earth materials to create the embankments.

Construction phase vehicle movements to this site will be generated by the delivery and removal of materials, significantly:

- hardcore stone materials for construction of a temporary access road;
- engineered fill for the embankment; and
- felled trees.

It is estimated that 35 to 40 HCV trips could be generated for deliveries to this site over a duration of 4 weeks. The HCV trips generated are therefore estimated to peak at 4 per day.

An estimated 30 to 35 trips will be generated from the removal of trees and earth excavated to create the embankments. Disposal of earthworks would take place during a 3-month work programme and peak trips is estimated at 6 per day.

In total there will be an estimated 75 HCV trips over 16 weeks.

14.5.2 Works to Tymon Park (east of M50)

It is proposed to construct a temporary entrance to the site compound off Limekiln Road. This entrance will be in place for the entire duration of the Scheme (24 months). It will be the main point of access to and exit from the site during construction of the embankments, flow control structure, and the ICW at Tymon Park. It will also be used for secure storage of equipment and vehicles for works in the remainder of the Scheme.

14.5.2.1 Site setup

Initially a site compound and the works areas in the Park will be fenced off, and the construction routes for transport of materials will be constructed for access to the works areas within the Park. The topsoil will be stripped and stockpiled on site. The hardcore for the construction routes must be imported. The main deliveries to site over this period will be generated by:

- fencing for securing the site and works areas;
- site offices and welfare facilities;
- earthworks machinery;
- hardcore stone materials for construction of a temporary access roads; and
- the removal of trees from the works areas.

It is estimated that 170 to 185 HCV trips could be generated for deliveries and removals to and from this site over an initial 8 to 12-week period. The trips generated are therefore estimated to peak at 6 per day.

14.5.2.2 Main Works

After site setup, the main works will then commence, including the removal and stockpiling of topsoil in the designated areas, the removal of subsoils in the works areas, sheet piling and construction of the main embankment, construction of the flow control structure, earthen embankments, and excavation of earth materials to create the Integrated Constructed Wetland (ICW).

For the purposes of general fill, it is expected that the arisings will be mostly deemed acceptable material for reuse to create the embankments and final site regrading and restoration. However, for determination of the worst-case traffic impact, it is conservatively assumed in this assessment that 50% of the arisings are unsuitable and that this volume of fill must be exported, and the remainder of materials required will be imported *via* the public road network.

Deliveries of imported material for the embankments are estimated at 230 trips over a 12-week period, with an estimated peak of 8 trips per day.

Concrete works tend towards high delivery volumes for discrete works activities. Based on the shape of the flow control structure, it is estimated that the construction of the base will require 5 concrete trucks to deliver in a single activity, possibly queued on the public road. Similarly, the construction of the walls may generate 5-6 concrete trucks.

It is possible that some concrete elements may be constructed using precast, fabricated offsite, delivered and placed. This option would eliminate the concrete deliveries for the walls of the flow control structure and avoid the potential queues of concrete trucks. A total of 5 HCV trips would be required to deliver the precast concrete elements.

A final finishing works phase will require the import of bituminous macadam for the footpaths over the control structure, and to restore the paths within the Park, with the export of surplus arisings.

The footpaths are estimated to generate 30 HCV trips over a 4 to 6-week period, peaking at 4 trips per day.

14.5.2.3 Disposal

The surplus arisings may be significant, particularly where the excavation of the Integrated Constructed Wetland is estimated to amount to 4,000 to 5,000 tonnes of surplus material for disposal. The highest feasible rate at which the 275 to 300 HCV trips generated to export the material onto the public road system is largely dependent on the capacity of the temporary access roads within the Park, and the amount of storage for stockpiled material that the Park can accommodate. At a worst-case, it is estimated that 12 to 15 trips may occur in an 8-hour working day for a period of 15 days to dispose of the surplus.

In total 545 trips are anticipated over a 20 to 24-week period.

14.5.3 Works at Whitehall Park

It is proposed to realign the river in public open space lands bounded by Whitehall Close, Whitehall Park, Grosvenor Court and Templeville Road.

The cutting for the proposed realignment of the Poddle is similar in volume to the proposed filling to the west side of the works area. For the purposes of general fill, it is expected that the arisings will be mostly deemed acceptable material for reuse. However, for determination of the worst-case traffic impact, it is conservatively assumed in this assessment that 50% of the arisings are unsuitable and that this volume of fill must be exported, and the equivalent of materials imported *via* the public road network.

Deliveries for filling the west side are estimated at 50 trips over a 6-week period, with an estimated peak of 4 trips per day.

Some tree felling is required which it is estimated will generate 4 to 8 HCV trips during the same period.

In total 55 to 60 trips are anticipated over a 7-week period.

14.5.4 Works at Wainsfort Manor Crescent

It is proposed to construct flood protection walls on both banks of the River a length of approximately 50m on both sides of the Lakelands Overflow, and on the left bank of the river from the Overflow as far as the Terenure Badminton Club for a length of 157m. These works will be accessed from the open space at Wainsfort Manor Crescent. A temporary works / set down area will be established in the open space area at Wainsfort Manor Crescent with access from Wainsfort Manor Drive for the duration of works in this location. Initial imports of fencing, hardcore, machinery and facilities are estimated to generate 3 to 6 HCVs.

Some tree felling is required which is estimated will generate 8 to 12 HCV trips to dispose of.

The construction of the concrete retaining walls is expected to be slow work due to difficulty of accessing the opposite back of the river, and the deep excavations required for the mass concrete bases. Stone facing to these walls will also be slow manual work.

Concrete works tend towards high delivery volumes for discrete works activities. Based on the linear shape of the structure, it is estimated that the construction of the mass concrete will be done in 15 activities, each requiring 12 concrete trucks to deliver in a day and possibly queued on the public road. The construction of the reinforced concrete bases and walls will progress at a slower rate, and there may be 12 to 24 activities of 1 to 2 deliveries each.

Stone facing to these walls is manual work and the stone may be stored in the compound. An estimated 30 HCV trips is required to provide the volume of stone, but the rate of use does not demand an intense schedule of delivery. A duration of 9 weeks is estimated for this work, requiring typically 4 HCV trips per week.

In total 250 to 260 trips are anticipated over a 14-week period.

14.5.5 Works to Rear of Fortfield Road, South of KCR

It is proposed to construct flood protection walls a length of 94m on the right bank of the River, to the rear boundary of the properties at nos. 1 to 21 Fortfield Road, South of KCR.

Some tree felling is required at this works location which is estimated will generate 6 to 8 HCV trips to dispose.

The construction of the concrete retaining walls is expected to be slow work due to the linear nature of the works area, the constrained site and access, and the deep excavations at the river's edge. Stone facing to these walls will also be slow manual work.

Concrete works at this location are expected to be done in typically 8 to 12m lengths of base or wall, with 1 to 2 concrete truck deliveries for each day of pouring. The concrete works are estimated to continue for a 5-week period at this rate.

Stone facing to these walls is manual work and the stone will have to be delivered as required. . An estimated 20 HCV trips is required to provide the volume of stone, but the rate of use does not demand an intense schedule of delivery. A duration of 16 weeks is estimated for this work, requiring typically 2 HCV trips per week.

In total 50 trips are anticipated over a 22-week period.

14.5.6 Works to Ravensdale Park

It is proposed to construct flood protection walls on the left bank of the River within the Park from the northwest corner of the Park ending at the southeast corner of the builders' providers property. A replacement pedestrian bridge is proposed over the river within the Park, ensuring access from the Ravensdale Drive to Kimmage Road Lower is maintained in the Scheme. A new flood defence wall a length of 190m will be constructed through the centre of Park.

A temporary works / set down area will be established in the Park and will be fenced off. This will be in place for the duration of works at this location.

Initial imports of fencing, hardcore, machinery and facilities are estimated to generate 3 to 6 HCVs.

Some tree felling is required which is estimated will generate 12 to 16 HCV trips to dispose of.

The construction of the concrete walls is expected to be slow work due to the deep excavations at the river's edge. Stone facing to these walls will also be slow manual work.

Concrete works at this location are expected to be done in typically 8 to 12m lengths of base or wall, with 1 to 2 concrete truck deliveries for each day of pouring. The concrete works are estimated to continue for a 5 to 7-week period at this rate.

Stone facing to these walls is manual work and the stone may be stored in the set-down in the Park. An estimated 11 HCV trips are required to provide the volume of stone, but

the rate of use does not demand an intense schedule of delivery. A duration of 4 weeks is estimated for this work, requiring typically 3 HCV trips per week.

In total 70 trips are anticipated over a 14-week period.

14.5.7 Works at St. Martin's Drive

It is proposed to construct a retaining wall a length of 120m on the right bank of the River in an area of open space at the end of St. Martin's Drive.

The construction of the concrete retaining wall is expected to progress at a reasonable rate. Concrete works tend towards high delivery volumes for discrete works activities. Based on the linear shape of the structure, it is estimated that the construction of the mass concrete will be done in 5 activities, each requiring 11 concrete trucks to deliver in a day and possibly queued on the public road. The construction of the reinforced concrete bases and walls will progress at a slower rate, and there may be 4 to 8 activities of 1 to 2 deliveries each.

Stone facing is slow manual work and the stone may be stored in a secure area at the site . An estimated 5 HCV trips are required to provide the volume of stone, but the rate of use does not demand an intense schedule of delivery. A duration of 3 weeks is estimated for this work, requiring typically 2 HCV trips per week.

Tree felling is required which it is estimated will generate 18 to 22 HCV trips to dispose.

In total 100 trips are anticipated over a 10-week period.

14.5.8 Works at Mount Argus Close

It is proposed to construct a retaining wall for approximately 15m on either side of a footbridge crossing of the River at Mount Argus Close.

The construction of the concrete retaining walls is expected to be progress at a reasonable rate.

Concrete works tend towards high delivery volumes for discrete works activities. It is estimated that the construction of the mass concrete will be done in 3 activities, each requiring 2 concrete trucks to deliver in a day and possibly queued on the public road. The construction of the reinforced concrete bases and walls will progress at a slower rate, and there may be 6 activities of 1 to 2 deliveries each.

In total 15 trips are anticipated over an 8-week period.

14.5.9 Sealing Manholes

Construction works within public roads and associated areas for the River Poddle Flood Alleviation Scheme are the construction of sealed covers on existing manholes, or complete reconstruction of the manholes, depending on their condition at the following locations:

- Poddle Park Ravensdale Park / Poddle Park junction
- Saint Teresa's Gardens and Donore Avenue

The manhole at the rear of the car park at the National Stadium is required to be rehabilitated to improve access for maintenance. This is not expected to cause extra traffic or disruption on the public road so does not figure in the estimates.

For determining the worst-case impact, it will be assumed in this assessment that in all cases where works are required the poor condition of the existing manhole requires that they will either be excavated to full depth and surrounded with mass concrete or completely reconstructed.

The works require an area to be fenced off at each manhole location of suitable size to accommodate the excavation, materials and equipment, a mini-digger, 3t swivel dumper, earth lorry and concrete delivery. The presence of existing services traversing the excavation areas may cause difficulties with the works, thus increasing the footprint of the excavation so that these can be diverted or made safe.

The estimated duration of the works to each manhole is 5 working days to finish with reinstatement with a temporary surface. It is assumed that the permanent resurfacing to all locations will follow in a period of 2 to 6 months.

14.5.10 Summary of traffic Estimates at Each Works Location

Table 14-2 provides a summary of the traffic estimates at all of the works locations as described above.

Table 14-2: Traffic estimates based on loads and estimated duration of works

Location	Works	Duration (Weeks)	HGVs/HCVs	Peak (loads per day)
Tymon Park (East of M50)	**Site Setup**	8-12	170-185	6
	Embankment Works	12	230	8
	Footpath Works	4-6	30	4
	Concrete Works	3	10	5
	Disposal	12-15	545	12-15
	Total	20	1000	
Tymon North (west of M50)	**Deliveries**	4	35-40	4

Location	Works	Duration (Weeks)	HGVs/HCVs	Peak (loads per day)
	Earthworks disposal and Tree Removal	12	30-35	6
	Total	12	75	
Whitehall Park	**Deliveries**	6	50	4
	Tree Removal	6	4-8	
	Total	7	55-60	
Wainsfort Manor Crescent	**Site Setup**		3-6	
	Tree Removal		8-12	
	Concrete Works	10	235	12
	Stone Deliveries	9	30	4 (per week)
	Total	14	275-285	
Rear of Fortfield Road	**Tree Removal**		6-8	
	Concrete Works	5	22	2
	Stone Deliveries	16	20	2 (per weeks)
	Total	22	50	
Ravensdale Park	**Site Setup**		3-6	
	Tree Removal		12-16	
	Concrete Works	5-7	35	2
	Stone Deliveries	4	11	3 (per week)
	Total	14	70	
St. Martin's Drive	**Concrete Works**	6	75	11
	Stone Deliveries	3	5	2 (per week)
	Tree Removal		18-22	
	Total	10	100	
Mount Argus Close	**Concrete Works**		10	2
	Total	8	30	
Sealing of manholes		2 months		

14.6 Likely Significant Effects

As discussed in the previous sections, it is considered that the main transport effects will be associated with the movement of HCVs and HGVs travelling to and from and turning into the sites when delivering and removing materials. At each site location, the following are the likely impacts for public road users including pedestrians.

14.6.1 Disruption or Diversion of Traffic and Pedestrians at the Works Locations

14.6.1.1 Tymon Park (east and west of the M50)

The main works sites in Tymon Park are located off public roads, where there is enough space available to provide access and set back gates and fencing to establish safe working areas without a requirement to divert pedestrians or traffic. It is considered that the impact to public road and footpath users will be Not Significant as traffic disruption will be restricted to times when vehicles are entering or exiting the sites. No residual impact is anticipated.

14.6.1.2 Whitehall Park / Wainsfort Manor Crescent, rear of Fortfield Road, St. Martin's Drive

The works at Whitehall Park / Wainsfort Manor Crescent are in locations that are currently used for access for maintenance of drainage infrastructure for the Poddle. Being existing public open spaces there is sufficient space within these locations to set back fencing and gates without a requirement to divert pedestrians or traffic.

Access to the works area to the rear of Fortfield Road will require unrestricted use of the gated entrance off Kimmage Road West during the works. The informal parking spaces currently in use at this location will not be available for the duration of the works.

Additionally, the works at St. Martin's Drive may cause displacement of parking at the end of the cul-de-sac and to pedestrians along the footpaths on the river side of the Drive for the duration of the works planned here. However, there is ample space elsewhere along the Drive for car parking, and a footpath along the opposite side of the Drive. In addition, the hours of working on Monday to Friday between 07:30 and 16:30, and as may be required on Saturdays from 08.00 hours to 13.00 hours should mean that there is no undue impact on road users and pedestrians at this location.

All of the above impacts are considered to be Slight, with no residual impact to public road and footpath users anticipated.

14.6.1.3 Ravensdale Park

Ravensdale Park is one of the main works sites in the Scheme. A temporary works / set down area will be established at the Park, with access from the north along Ravensdale Park. The informal parking spaces on Ravensdale Park will be coned off as part of the Traffic Management Plan details to ensure visibility at the access.

Access to works areas will also be from points along Ravensdale Drive and in front of the builders' providers to construct the walls and footbridge in this location. As there are no alternative vehicular routes out of Ravensdale Drive, and access to the footbridge will be restricted during the works, at this location there will inevitably be disruption to road users

along Ravensdale Drive, to the builders' providers, and to pedestrians who normally use the footbridge to cross through the Park from Ravensdale Drive to Kimmage Road Lower. In addition, residents of Ravensdale Park and Poddle Park who might normally use the Park to walk through to Kimmage Cross Roads will have to be diverted to Kimmage Road Lower as there will be no access through the Park for the duration of the works at this location.

These impacts are considered to be Moderate on road users and pedestrians. No residual impact is anticipated when the works are complete.

14.6.1.4 Mount Argus Close

At Mount Argus Close minimal space is available between the river edge and the road edge for works set-up. The road shoulder is used for informal parallel parking and this will be closed off for the duration of the works. There is a footpath on the opposite side of the Close for pedestrian use. The footbridge over the river at the works location will be closed for the duration of the works, which will add *ca.* 220m on footpaths to a pedestrian journey between the Mount Argus Close and Mount Argus Way cul-de-sacs. These works will cause disruption to habitual parking and walking routes of the residents, but there are safe alternatives for both. The impact is considered to be Slight due to the temporary loss of parking and restrictions to pedestrian access with no residual impact anticipated.

14.6.2 Disruption to Traffic During Large Vehicle Movements at Site Access Locations

14.6.2.1 Tymon Park (east and west of M50)

The Tymon Park works sites are located off the public roads, with enough space available to set back gates from the public road and footpaths. It is considered therefore that the access layouts can accommodate large vehicle movements. The impact is considered to be Imperceptible with no residual impacts.

14.6.2.2 Rear of Fortfield Road

The access to the works area at the rear of gardens on Fortfield Road is immediately after the left-turn lane from the Kimmage Crossroads (junction R817 and R818). A short length of the road shoulder is used for informal parallel parking which will obstruct visibility of the access to oncoming traffic. It is considered that the set-up at this site will involve closing off the shoulder and informal parking spaces for the duration of the works and using flagmen to coordinate the large vehicle movements with the traffic light controlled public traffic.

A bus stop serving three routes is located immediately beside the access gate at Kimmage Road West (rear of Fortfield Road) and may be disrupted if large vehicles are turning in this area. It is noted that the road verge at the access is currently used as informal parking without apparent disruption to the bus service, and it is therefore considered that the impact to Dublin Bus to be Not Significant and temporary with no residual impact anticipated.

14.6.2.3 Whitehall Park, Wainsfort Manor Crescent, St. Martin's Drive

These smaller works sites are generally at locations of existing maintenance access to the Poddle. The sites are generally narrow and do not accommodate turning of large vehicles or reverse manoeuvres. There will be an impact to road users when vehicles are undertaking these manoeuvres, and this will be Not Significant and for a temporary duration with no residual impact.

14.6.2.4 Ravensdale Park

The access to the works Ravensdale Park is close to the traffic-light controlled junction with the R817 Lower Kimmage Road. The shoulder along the near side of the road is used for informal parallel parking. This parking will obstruct sightlines to the access and may impede the turning movement of large vehicles entering or leaving the site. It is considered that the set-up at this site will involve closing off the parking spaces at the entrance for the duration of the works with flagmen to coordinate large vehicle movements turning from Kimmage Road Lower onto Ravensdale Park. There will be a Slight impact to road users when vehicles are using the access, but this will be of short duration and temporary. There will be no residual impact.

14.6.2.5 Mount Argus Close

Mount Argus Close is expected to have a linear site set-down on the hard-shoulder. The residential road is a cul-de-sac with insufficient road width to accommodate vehicle turning movements. HCVs and vehicles for the workers may use the junction with Mount Argus Court which is located c65m before the works to reverse in and exit the cul-de-sac. There will be Slight impact on the road users at this location due to the low number of residential road users, and that it will be infrequent occurring only when vehicles are turning. There will be no residual impact.

14.6.3 Disruption Due to Vehicles Queued at the Site Access or Nearby

14.6.3.1 Tymon North (Tymon Park west of M50)

There is sufficient length of existing access road within Tymon North (west of M50) to accommodate vehicles queueing off the public road. The impact of vehicles queueing at this location would therefore be Imperceptible.

14.6.3.2 Tymon Park (east of M50)

At Tymon Park (east), Limekiln Road is single lane and cannot accommodate queues of vehicles without causing disruption, especially at school drop off and collection times and at busy periods for Park visitors. Dublin Bus also have a route on this road. The impact to road users would be Very Significant if vehicles were to queue at this location.

14.6.3.3 Whitehall Park, rear of Fortfield Road

The smaller sites at Whitehall Park and the rear of Fortfield Road are accessed off Regional roads and could not accommodate vehicle queues without causing disruption to the flow of traffic. St. Anne's Terrace is a residential cul-de-sac close to the left-turn lane from Fortfield Road. All roads at KCR are on Dublin Bus routes. The impact of vehicles queued at these locations would be Very Significant.

14.6.3.4 Ravensdale Park

Ravensdale Park could possibly accommodate queued vehicles on Brookfield Green, the road which borders the north park boundary. The builders' providers and one private access would be impacted by a lane closure, but as this is a residential cul-de-sac it is considered that the disruption would not be severe. The impact of vehicles queued at these locations would be Moderate.

14.6.3.5 Wainsfort Manor Crescent, St. Martin's Drive, Mount Argus Close

The smaller sites which are accessed from residential roads could potentially accommodate vehicle queues. This however can cause disruptions to residents at these locations, especially during times of the day when they would be going to work or returning home. The impact of vehicles queued at these locations would be Slight.

14.6.4 Disruption Caused by Additional Parking on Main Roads by Workers

It is considered that the main works sites have sufficient space to provide for on-site parking by the workers for the on the Scheme. The smaller works areas are restricted and while it may be possible to provide for a small number of vehicles within the works, the peak light vehicle parking could not be accommodated within these works areas. Surplus vehicles must therefore find parking in the general vicinity. The impact to parking availability on local roads in proximity to works areas would be Imperceptible.

14.6.5 Additional Congestion to Traffic in the Wider Area

The expected peak vehicles at each works area are described in the foregoing sections.

The transport of materials to and from the site are likely to utilise the N81 as part of the route, as the quarries and landfills in closest proximity to the area are in the Wicklow and Kildare directions which are accessible via the M50 Motorway. The impact would be Slight for the duration of the works with no residual impact.

14.6.6 Lane Closures at Manhole Works

Where the manhole is located close to the verge, it may be possible to close off only one lane and implement traffic management in the other lane using a stop-go system. Where the manhole is located centrally in the road, it is likely to necessitate a road closure and diversion, otherwise works should be done outside of peak hours. The details for traffic management at each specific location will be subject to review and direction by DCC as part of the Road Opening Licence application. Potential lane or road closures and diversions would be required at the following locations with potential to affect road users at the locations described following.

14.6.6.1 Along Poddle Park and Junction with Ravensdale Park

These works would be in proximity to an entrance to KCR Industrial Estate and many residences at this location. An alternative route would be to approach the Industrial Estate from the west along Cashel Road from Stannaway Road. Residences along Poddle Park could be approached from the north along Bangor Road from Stannaway Road or from Blarney Park from Larkfield Avenue.

Lane or road closures and diversions at these locations would have Significant effects on road users with knock on effects on diverted routes.

14.6.6.2 Along Donore Avenue and in Vicinity of St. Teresa's Gardens

These works would be in proximity to White Swan Business Centre, St. Catherine's National School, St. Teresa's Church, at the entrance to St. Teresa's Gardens and Donore Boxing Club, and to many residences along the route. Works at manholes located centrally in the road may require a road closure and diversion of traffic through the adjacent streets, with knock-on effects on the diverted routes.

Lane or road closures and diversions at these locations would have Significant effects on road users. No residual impact is anticipated.

14.6.7 Impact Assessment Summary

Table 14-4 provides a summary of the traffic estimates at all of the works locations as described above.

Table 14-3: Summary of Impacts

Description	Location	Factors	Significance
Disruption or diversion of traffic and pedestrians	**Tymon Park & (east & west of M50)**	Pedestrians	Not Significant
		Traffic	Not Significant
	Whitehall Park / Wainsfort Manor Cresent, rear of Fortfield Road, St. Martin's Drive	Parking	Slight
		Pedestrians	Slight
	Ravensdale Park	Pedestrian diversion	Moderate
		Parks/park users	Moderate
		Builders' providers	Moderate
		Residential road users	Moderate
	Mount Argus Close	Parking	Slight
		Pedestrian diversion	Slight

Disruption to traffic during large vehicle movements	**Tymon Park (east and west sites)**	Traffic	Imperceptible
	Rear of Fortfield Road	Parking	Not Significant and Temporary
		Public buses	Not Significant and Temporary
	Whitehall Park, Wainsfort Manor Cresent, St. Martin's Drive	Road users	Not Significant and Temporary
	Ravensdale Park	Parking	Slight and Temporary
		Road users	Slight and Temporary
	Mount Argus Close	Residential road users	Slight
Disruption due to vehicles queued at site access or nearby	**Tymon North (west of M50)**	Queueing on public road	Imperceptible
	Tymon Park (east of M50)	Schools	Very Significant
		Park visitors	Very significant
		Dublin bus routes	Very significant
	Whitehall Park, rear of Fortfield Road	Residential road users	Very Significant
		Dublin bus routes	Very Significant
	Ravensdale Park	Builders' providers	Moderate
		Private access	Moderate

	Wainsfort Manor Crescent, St. Martin's Drive, Mount Argus Close	Residential road users	Slight
Disruption caused by additional parking on main roads by workers	**In smaller works areas**	Local roads	Imperceptible
Additional congestion to traffic in the wider area	**M50 Motorway and N81**	Traffic and road users	Slight
Lane closures at manhole works	**Along Poddle Park and junction with Ravensdale Park**	Traffic diversions	Significant
		Road Closures	Significant
		KCR Industrial Estate	Significant
		Residential road users	Significant
	Along Donore Avenue and in vicinity of St. Teresa's Gardens	Residential road users	Significant
		Road closures	Significant

14.7 Mitigation Measures

The impacts to site access are described in the previous section and cannot be eliminated. They can be managed, and their impact reduced by the implementation of appropriate traffic management by the contractor.

14.7.1 Disruption or diversion of traffic and pedestrians at the access locations

For each access, the contractor shall be required to design and implement a specific Traffic Management Plan, which will include advance signage (Traffic Signs Manual Chapter 8), permitted delivery times and control measures.

At Ravensdale Park, the Traffic Management Plan will include the management of pedestrians who must divert around the works and the measures to ensure continuity of access to the builders' providers and to dwellings on Ravensdale Drive.

In residential areas, the initial communication with the residents prior to commencing works has proven to reduce the number of complaints which arise during projects. Ongoing communication during the works is also essential. Notice will be provided on the project website and SDCC/DCC will provide a letter drop to the local residents in advance of the works commencing.

14.7.2 Disruption to traffic during large vehicle movements at site access locations

The contractor shall be required to design and implement a specific Traffic Management Plan, which will include advance signage (Traffic Signs Manual Chapter 8), permitted delivery times and control measures..

14.7.2.1 Ravensdale Park

Flagmen will be present during these manoeuvres to manage traffic safety as part of the specific Traffic Management Plan.

14.7.2.2 Mount Argus Close

The initial communication with the residents prior to commencing works has proven to reduce the number of complaints which arise during projects. Ongoing communication during the works is also essential to maintain the relationship.

14.7.2.3 Whitehall Park, Wainsfort Manor Crescent, St. Martin's Drive

Flagmen will be present during large vehicle manoeuvres to manage traffic safety, as part of the specific Traffic Management Plan.

The Traffic Management Plan will also identify any restrictions on times of deliveries that are deemed appropriate such as no deliveries during morning and evening commuting times for work and school runs.

14.7.3 Disruption due to vehicles queued at the site access or nearby

14.7.3.1 Tymon Park (east of M50)

It was identified in the previous section that very significant disruption would result from queued vehicles on Limekiln Road. The works at this location have the highest quantities in terms of earthworks import and disposal, but less so for concrete delivery.

The programming and management of earthworks deliveries, stockpiling and disposal will greatly affect the frequency of HCVs using the access, and this element of the construction plan should give careful consideration to the impact on the road network.

Any anticipated activities which result in queuing will be contained in the Traffic Management Plan and both the local roads authority and Dublin Bus will be consulted as

part of this process. A diversion route is identified in the previous sections which would add *ca.* 3km to the road users' trip.

14.7.3.2 Whitehall Park

It was identified in the previous section that very significant disruption would result from queued vehicles at this location. The proposed works are predominantly cut-and-fill earthworks and careful planning of deliveries will mitigate the potential for vehicles to be queued.

14.7.3.3 Rear of Fortfield Road

It was identified in the previous section that moderate disruption would result from queued vehicles at this location. The proposed works include in-situ concrete construction which has the potential for periods of high activity and potential queues of concrete trucks.

The use of precast concrete walls would mitigate some of the concrete works and mitigate the associated disruption.

The concrete bases are more likely to be in-situ concrete, and careful planning of the works to minimise the quantities to be delivered at each pour would also mitigate this impact.

The Contractor will consult with Dublin bus as part of the development of the construction and traffic management plans.

14.7.4 Disruption caused by additional parking on main roads by workers

Parking by workers in the vicinity of the sites may be difficult to accommodate. The sites are spread over a distance of 4.5km (excluding St. Teresa's Gardens) however, all work sites will not be undertaken concurrently.

14.7.5 Lane Closures at Manhole Works

Lane closures are unavoidable where the works involve deep excavation in the road. These works will be done by DCC who are familiar with these operations and will implement the appropriate Traffic Management Plan for the works as a whole, and for each location. The measures to be implemented will include advance warning signage and alternative route signage.

14.8 Residual Impacts

On completion of construction of the Flood Alleviation Scheme there will be no residual impacts on traffic and transport in the receiving environment.