

If storm water attenuation is required a surface water discharge flow restriction will be imposed by Dublin City Council and any flow in excess of this will be attenuated.

An option at this stage, if attenuation is required, would be to provide a storage tank on the Upper Basement Level. A flow-restricting device would be installed in the surface water outfall manhole within the development. Positioning the storage tank at the Upper Basement Level would allow the tank to discharge by gravity to the sewer after the storm has subsided.

The surface water outfall manhole within the development will be fitted with a non-return valve to prevent surcharge from the surface water sewer backing up into the developments drainage system during high tides in the River Liffey.

### **Watermains**

There is an existing water supply network in the area of the development. The site has a 6" diameter watermain on 3 sides and a 24" diameter trunk main on Tara Street.

Tests will have to be carried out to confirm the flows and pressures in the existing mains to ascertain an accurate assessment of the supply characteristics. Supply will only be provided from the existing 6" mains.

There are two hydrants adjacent to the site on Georges Quay, one on Tara Street and one on Poolbeg Street.

It is unlikely that the flow and pressure characteristics of the water supply in the area will be adequate to meet the requirements of the local Fire Prevention Officer.

It is anticipated that the proposed development would be Class I for the purposes of fire fighting requirements, and this necessitates a supply of 9,000 litres per minute of water for a 6 hour duration. If in the event of an inadequate supply a suitable arrangement of on-site storage tanks can be incorporated into the proposals. Again a more detailed investigation into the exact supply characteristics would be required.

## **14.0 FIRE STRATEGY**

### **14.1 BACKGROUND**

This section outlines the fire safety strategy for the building and is designed to be a summary of provisions to be discussed with the approving authority.

The base document for the design of the fire precautions is the Building Regulations using the guidance in the Technical Guidance Document B, Fire Safety (TGDB).

Other documents referred to are BS5588: Pts 5, 6, 8 and 12 addressing fire-fighting, places of assembly, managing the disabled and building management respectively.

### **14.2 BASIS OF FIRE STRATEGY**

The Fire Strategy is based upon a fire engineering approach, which achieves the functional objectives of Building Regulations.

The fire strategy is explained fully in Section 3 of the Fire Strategy Report.

### **14.3 MEANS OF ESCAPE**

#### **OFFICE LEVELS**

A phased evacuation regime is proposed for the building. The evacuation will commence with those on the floor of fire origin, and the floor above. The rest of the storeys in the building will be alerted to an incident. Mobility impaired occupants of the building and occupants may also be evacuated as part of the first stage. After the initial storeys are evacuated, at a time of 3 minutes, the rest of the building will be evacuated two storeys at a time, starting with the floors above those initially evacuated.

#### **STATION CONCOURSE AND RETAIL LEVELS**

The evacuation strategy is based on conventional escape route design with reliance on the use of voice evacuation system, with facility for pre-recorded messages and directive voice messaging. To facilitate deaf passengers, it is proposed to utilise the passenger information dot matrix signs to alert in case of fire.

#### **STAIR WIDTH AND OCCUPANCY**

The stair capacity is based on the assumption of 1200mm wide stairs. The assumptions result in the following floor space factors: -

Offices – 7m<sup>2</sup> per person

Plant rooms – 30m<sup>2</sup> per person

It is proposed to provide all doors into the core and stairs at the office and plant floors as self-closing FD60S doors. Doors into the stair at basement level will be self-closing FD90S doors.

### **STOREY AND FINAL EXIT WIDTHS**

The entrances from the office and plant floors into the central core and Stair 4 will be not less than 1100mm wide. The entrances into Stair 5 will be not less than 850mm.

### **EVACUATION OF THE MOBILITY IMPAIRED**

A disabled refuge will be accommodated in each escape stair. Typically an area of 1400 x 900mm is recommended, provided with a two-way communication system and the location of the refuge should not interrupt the flow of persons leaving the building.

## **14.4 COMPARTMENTATION AND STRUCTURAL FIRE**

### **COMPARTMENTATION**

The building is over 30m high, and is therefore provided with compartment floors and a life safety sprinkler system, and both stairs serving the offices are approached through protected lobbies. The Station Concourse, Platform and Retail area are within the same single compartment.

The station concourse is separated from the ground floor office entrance foyer by glazing, covered by a deluge type sprinkler system. This is a sprinkler branch pipe providing protection to the office foyer side of the glass. It is linked to the alarm system so that all sprinkler heads would discharge water onto the glass on the activation of the alarm. See Section 3.3.2 of the Fire Strategy Report for full details.

### **FIRE RATINGS**

Structural Frame	2 hrs
Enclosures to firefighting shafts	2 hrs

## **14.5 PROTECTION AGAINST EXTERNAL FIRE SPREAD**

### **EXTERNAL WALLS**

Construction of external walls, as the building is more than 18m high, will only comprise materials of Class C – s3 – d2 (European) or that have an index of performance (I) not more than 20 (National).

### **PROXIMITY TO BOUNDARIES**

There are no concerns over fire spread across the boundaries from the office floors as a result of the compartment floors. There is a section of the building overlooking Kennedy's on the corner of Tara Street and George's Quay. The façade overlooking Kennedy's is imperforate, and therefore there is no risk of fire spread over the boundary. The plant and office accommodation starts at third floor, and therefore does not overlook Kennedy's.

## **14.6 ACTIVE FIRE SUPPRESSION SYSTEMS**

### **SPRINKLER PROTECTION**

Sprinkler protection (Life Safety System) is required throughout all levels including Level 1 and 2 concourse and retail areas.

### **FIRE DETECTION AND ALARM SYSTEM**

It is proposed to provide a detection and alarm system to an L1 standard of I.S. 3218. To avoid unwanted alarms and unnecessary disruption to a building of this nature, an investigation time could be incorporated into the system.

## **14.7 FIRE FIGHTING FACILITIES**

### **ACCESS TO AND INTO THE BUILDING**

Fire Service access is available to 100% of the perimeter of the building.

The central core is provided as a fire-fighting core, with associated fire-fighting stairs and lift. The lift lobby and stair will be ventilated in accordance with BS 5588 Part 5, for full details see Section 3.5.1 of the Fire Strategy Report. A fire control and security room is provided at second and third floor level.

### **FIRE MAINS**

A wet rising main is provided in the fire-fighting core, with a 45m<sup>3</sup> storage tank provided at the base of the riser.

## **FIRE HYDRANT PROVISION**

The TGDB states that one hydrant should be provided for every building provided with a fire main. They should be located such that:

The distance from the building is not less than 6m or more than 46m;

The distance from a hydrant to the fire tender point (assumed to be the corner of Tara Street and Poolbeg Street) should not be more than 30m;

The hydrant(s) is located on the same site as the building or are provided by a sanitary authority on a public roadway adjacent to the site.

Confirmation should be sought off the water company as to where the nearest hydrant is to the building.

## **BASEMENT CAR PARK LEVEL**

The basement houses car parking and plant space. TGDB states that basement car parks are not normally expected to be fitted with sprinklers, and that the mechanical ventilation should be capable of providing 10 air changes per hour in a fire situation. It is assumed in the guidance that a fire in an unsprinklered car park will naturally be contained to one car, and will not spread to involve more than one car. It is therefore implicit in the recommendations that the mechanical ventilation system is capable of keeping the area sufficiently clear of smoke for a single car fire.

It is therefore proposed to provide a mechanical ventilation system capable of providing 10 air changes per hour. This will either be a fully ducted system of one utilising impulse jet fans and mechanical extract fans. It is not proposed to provide sprinkler protection to the basement.

The stairs linking the basement and ground floor should be separated by a fire door. Alternatively, a separate stair should serve basement to ground floor only.

## **15.0 CONSTRUCTION METHODOLOGY**

Contained within Appendix B is a draft Construction Phasing Document. Assumptions for Construction Phasing:

- Townsend Street Entrance: Open all day and will include lift access to both platforms
- A crash deck will be required to protect the railway during construction. This will be subject to agreement with Railway Safety Commission (RSC)

The sequence of the work for the development of the site will be as follows:

### **Site Mobilisation: Construction Traffic**

Main access in and out of site will be from Poolbeg Street. Poolbeg Street needs to be closed to public access. This will not be a full closure to allow pedestrian and vehicular access from Tara Street to the offices to the south of Poolbeg Street.

Materials from site will be loaded into road vehicles in Poolbeg Street adjacent to the site. Vehicles will exit Poolbeg Street turning right into Tara Street.

Due to the confined nature of the site, materials will be marshalled at a suitable remote yard, to be confirmed. Loads will then be re-made with essential items for current work. Deliveries to site will be off loaded in Poolbeg Street, within the site compound. Vehicles will enter Poolbeg Street from Tara Street and exit via Luke Street.

Materials will be delivered to and from the construction face using a tower crane and materials hoists. During early stages of construction, cramage will be provided by mobile cranes set up within the site compound.

### **Site Mobilisation: Offices and Accommodation**

Some temporary office space will be provided in the site compound in Poolbeg Street. However owing to the confined space available additional floor space can be provided from a variety of sources, such as renting the adjoining area.