

26 February 2014

Amy Watson
Senior Planner – Industry, Social Projects and Key Sites
Planning and Infrastructure
GPO Box 39
Sydney NSW 2001

RtS – IMAX Entertainment, Commercial and Retail Development, Darling Harbour

Dear Ms Watson,

Thank you for your correspondence 10 February 2014 advising Sydney Water to respond to the submissions made for the IMAX development.

Stormwater Response

The proposed IMAX structure will be built over two stormwater culverts. Sydney Water's policy and guidelines seeks to:

- Ensure the ongoing provision of local drainage and broader flood mitigation services to our customers;
- Facilitate urban development by providing timely information, advice and responses to enquiries and applications
- Manage risks associated with building over and adjacent to stormwater assets;
- Protect the interest of customers by ensuring that build over and or build adjacent to proposals do not:
 - Increase flood risks
 - Have adverse flood impacts
 - Increase costs to maintain and replace stormwater assets.
- Sydney Water will consider a proposal to locate a building over a stormwater asset where there is an existing building located over the asset and building over the asset is the only feasible solution to facilitate reasonable development of the property
- Please refer to the "Building over or adjacent to Sydney Water's stormwater assets" policy and guideline.

The applicant is required to:

- Demonstrate building over Sydney Water stormwater assets are the only feasible option. No new structure is to be placed over or adjacent to Sydney Water stormwater assets that interferes with its operation and accessibility
- Determine feasible options to deviate the stormwater assets around the proposed building. Consent to build over will be provided if the applicant can demonstrate that a future deviation and or adjustment is feasible through engineering investigations, modelling and detailed concept design. The alignment route identified must be reserved under Sydney Water on the title of the land.
- Provide a Stormwater Impacts Report from a qualified person with access to Sydney Water's GIS Asset Database. The report is to be verified by the Water Service Coordinator for Sydney Water to assess and formulate further requirements.

- Investigate and identify the condition of the assets. Attached are the specifications for conduit inspections. Note that Sydney Water will require deviation or reconstruction of the asset in circumstances where the:
 - Remaining life of the asset is less than the expected life of the proposed structure
 - Proposed structure will intersect the asset
 - Type of asset is not suitable for building over
- Submit a 2D flood study with flood extents, velocities and depths for 5, 20 and 100 year storm events with provisional hydraulic and hazard categories (low and high). In addition: include any necessary design elements or works to ensure that local flood risks are suitably managed and mitigated
- The proposed development shall incorporate sufficient flood management elements to ensure that the development shall not increase flood risks to the community nor shall there be any potential for increased community expectation or demand for stormwater asset amplification to be undertaken by Sydney Water in the future
 - Demonstrate a best practice approach to managing people and property in high flood hazard areas.

Sydney Water E-Planning

Sydney Water has an email address for planning authorities submit statutory or strategic planning documents for review. This email address is urbangrowth@sydneywater.com.au. The use of this email will help Sydney Water provide advice on planning projects faster, in line with current planning reforms.

Further advice and requirements for this proposal are at attachment 1 (overleaf). If you require any further information, please contact Jordan Faeghi of the Urban Growth Branch on 02 8849 4649 or e-mail jordan.faeghi@sydneywater.com.au.

Yours sincerely,



Emma Whale
A/Manager, Growth Strategy

Attachment - Specifications for conduit inspections

TS-09.1. Standards

The Contactor must ensure that all work carried out under Clause TS-09 is in compliance with the latest edition of Conduit Inspection Reporting Code of Australia CIRCA WSA-05 and record information using the current version of WinCan.

TS-09.2. CCTV

TS-09.3.1. On the Superintendent's Representative's direction, the Contractor must carry out Close Circuit Television (CCTV) inspection on nominated conduit (identified in the Work Order) to provide an internal visual condition of the nominated conduit.

TS-09.3.2. The Contractor must ensure that the CCTV inspection equipment and associated software have the capability to:

- TS-09.3.2.1. Inspect conduits that are circular, oviform and box shaped of varying sizes
- TS-09.3.2.2. Inspect conduits varying in sizes from less than 150mm up to over 1500mm diameter
- TS-09.3.2.3. Locate and internally inspect maintenance holes and inspection shaft
- TS-09.3.2.4. Be integrated with the latest version of WinCan for viewing or other format as may be approved by Superintendent's Representative.
- TS-09.3.2.5. Meet the following minimum standard requirement, but not limited to:
 - a) Standard CCTV camera with tilt / panning head which produces full colour images.
 - b) Sond Camera with tilt / panning head which produces full colour images.
 - c) Push rod camera that has capacity to carry out inspection and navigate bends up to 90 degree in 100mm diameter conduit which produce full colour video.
 - d) The speed of the inspection camera in the conduit shall be as specified below, or at such other speeds as agreed by the Superintendent's Representative to enable all conduit details to be observed and extracted from the video recording.
 - 0.1 m/s for conduits of diameter less or equal to 150 mm.
 - 0.15 m/s for diameters between 200 mm - 300 mm.
 - 0.20 m/s for diameters exceeding 300 mm.

TS-09.3.3. Produce Reports including but not limited to:

- TS-09.3.3.1. Conduit Condition Report – including hard and soft copy of colour video using WinCan (or similar) software to visually depict:
 - a) The conduits internal condition from maintenance hole to maintenance hole including all laterals, junctions, side-lines (along the axis of the lateral)
 - b) Detailing and coding all internal structural and service defects found in the conduit.

- c) All significant internal defects (structural and service) images / photographs (high quality jpeg format) which are clearly marked with:
- Conduit asset number
 - Asset number of upstream and downstream maintenance hole
 - direction of inspection,
 - chainage,
 - conduit dimension,
 - defect observed,
 - date and time.

TS-09.3.3.2. Any significant errors/ deviations from supplied asset data shall be noted in the Notes / Comment Field in the latest version of WinCan or as otherwise instructed by the Superintendent's Representative.

TS-09.3.3.3. A format requested and approved by the Superintendent's Representative including but not limited to CD, DVD disks, or incorporated with WinCan reports.

TS-09.3.3.4. Any other Report in a format requested and approved by the Superintendent's Representative

TS-09.3.4. Quality

Where the Contractor is to provide a Video or Photograph in accordance with Clause TS-09.3.5 and Clause TS-09.3.6 then the Contractor must ensure that in addition to the requirements specified in latest edition of CIRCA WSA-05 Section 2.5, on camera positioning and picture quality the following shall be noted:

- a) The camera shall be positioned to reduce the risk of picture distortion and the lens shall be positioned to look along the axis of the pipe.
- b) Unless approved by the Superintendent Representative, the inspection equipment shall be run opposite to flow direction to ensure full view of any branch / house service line joining-in at an acute angle.
- c) The inspection survey shall give a clear view of each internal cut-out at junctions and house service connections looking along the axis of the lateral.
- d) The camera and illumination shall provide a clear, accurate and in-focus record of the pipe's internal condition, in colour.
- e) Distance measurement for pipe inspection, in all instances, shall commence from the face of the maintenance hole where the pipe starts.
- f) Steam and fog shall not be a reason for abandonment of survey. The line has to be ventilated in case of steam/fog in the line or the lens cleaned in the case of steam/fog on the lens. In each case the survey must be re-started at the Contractor's expense.

TS-09.3.5. Video Report

Where the Contractor is to provide a Video Report in accordance with Clause TS-09.2 then the Contractor must ensure that:

- TS-09.3.5.1. Video Report must show the following information on the first screen as per recommended by CIRCA WSA-05 or latest version:
- Date and time of inspection

- Program/driver Title as provided by the Superintendents Representative.
- Name/ Hydra asset number of sewer pipe (known as System Generated Asset Number)
- Start maintenance hole Hydra asset number to finish maintenance hole Hydra asset number
- Conduit dimension/size and material.
- Site address

TS-09.3.5.2. The inspection monitor display shall incorporate an automatically updated camera position record in metres and tenths of a metre, from the set up point, at the start of the survey, along the line of the conduit. The display on the monitor during run shall be restricted to the identification of the line (asset no.), size of pipe and distance.

- a) The Contractor shall ensure that linear measurement is accurate to + or - 1% or 0.3 m whichever is the greater.
- b) Distance measurement in all instances, shall commence from the face of the maintenance hole where conduit starts. The Contractor shall ensure that the metreage counter starts to register immediately the camera moves.
- c) The Contractor shall clearly demonstrate that the accuracy in linear measurement is being complied with using one or both of the following methods.
 - Use of a cable calibration device;
 - Tape measurement of the surface between maintenance hole.
 - d) The Contractor shall input site coding sheets onto an electronic data file using the WinCan (or similar) software. The Contractor may enter data directly into WinCan (or similar) software on site.
 - e) All inspection recordings are required to be documented in sequence with the work carried out.
 - f) Video stills, digitised pictures or photographs shall be provided if requested by the Superintendent's Representative to demonstrate the condition of pipes after cleaning. Or Conditions that might affect any pipe rehabilitation work.

TS-09.3.6. Photograph

TS-09.3.6.1. Where the Contractor is to provide a Photograph in accordance with Clause TS-09.2 then the Contractor must ensure that:

- a) Where the internal condition of the conduit has significant defects, photograph should be able to capture the entire defects. These defects may include:
 - Crushed or collapsed pipe
 - Fractures conduits
 - Evidence of erosion or gas attack and/or where reinforcement is exposed
 - Intruded connection

- Service conditions such as heavy root intrusions, infiltration gusher, heavy encrustation etc.
 - b) Where significant continuous defect exist over a certain length, photographs should be taken to represent a typical defect over that particular length.

TS-09.3.6.2. Digital photograph files shall be clearly identified in relation to the location (minimum requirement maintenance hole / node start and finish asset numbers), survey direction, metreage and date when photograph was taken.

TS-09.3.7. Report on entirety

Unless otherwise allowed for in Clause TS-09.7 or by the Superintendent's Representative, the Contractor must carry out the CCTV inspection and report on the entire nominated conduit - ie. the reports cannot be based on sample sites within the nominated conduit.

TS-09.3.8. Work Direction

TS-09.3.8.1. Unless otherwise approved by the Superintendent's Representative, the Contractor shall ensure that the CCTV equipment during conduit inspections will travel upstream from the downstream maintenance hole to the upstream maintenance hole for each nominated conduit section.

TS-09.3.8.2. Where the Contractor abandons whole or part of the nominated conduit in line with Clause TS-09.7, then, the Contractor must carry out the CCTV inspection on the remaining nominated conduit by ensuring that the CCTV equipment travels downstream from the upstream maintenance hole to the downstream maintenance hole for each nominated conduit section