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PRELIMINARY AERONAUTICAL IMPACT ASSESSMENT: 601 PACIFIC HIGHWAY, ST LEONARDS

I refer to Stockland's request for advice in relation to potential aeronautical limitations associated with an indicative redevelopment scheme of the site at 601 Pacific Highway, St Leonards, herein also referred to as "the site". AvLaw has conducted a preliminary assessment of the maximum building height restrictions at the site against prescribed airspace limits which exist due to necessary safety clearances (mandated in legislation) that must be provided between an aircraft and an obstacle.

AvLaw's assessment is based on the property boundaries at the address provided by Stockland, Obstacle Limitation Surfaces (OLS) requirements, Procedures for Air Navigation Surfaces-Aircraft Operations (PANS-OPS) limitations, Radar Lowest Sector Altitude (RLSALT) or Radar Terrain Clearance Chart (RTCC) sector boundaries, transit routes used by Aeromedical Emergency Service providers to access the Royal North Shore Hospital (RNSH) helipad and satellite imagery.

AvLaw's assessment is that the current published OLS height (being the Outer Horizontal Surface) across the site is *156m AHD*, the PANS-OPS is *335.2m AHD (1100ft)* and that the RLSALT/RTCC is *1100ft AHD (335m)*. AvLaw notes that the maximum building height of the indicative design scheme is at a maximum RL of 287.5m. This does not include plant room. Inclusive of plant, the maximum RL for the permanent structure is 304.5m.

Based on a preliminary assessment of this indicative design scheme against current aeronautical limitations, AvLaw considers that aviation approval would be given for the proposed maximum permanent structure height of RL304.5m, which is below the PANS-OPS and RTCC surfaces covering the site. Provided temporary construction cranes and the overall building envelope inclusive of plant room, towers, masts, building maintenance unit (BMU) when in operation and ancillary features all remain below the PANS-OPS and RTCC surfaces, aviation approval should be granted. No permanent building height is possible above the PANS-OPS and RTCC.

1. Aviation legislation governing building height, crane activity and impacts on aviation activity in the Sydney Basin

Part 12 of the *Airports Act 1996* and the *Airports (Protection of Airspace) Regulations 1996* establish a framework for the protection of airspace at and around airports. The Airports Act 1996 defines any activity resulting in an intrusion into an airport's prescribed airspace to be a "controlled activity", and requires that controlled activities cannot be carried out without approval. The Regulations provide for the DIRD or the airport operator to approve applications to carry out controlled activities, and to impose conditions on an approval.

With respect to Sydney Airport, OLS, PANS-OPS and RTCC surfaces have been "declared" by the Commonwealth DIRD on 20 March 2015 and are therefore enshrined in legislation as its prescribed airspace.

2. Outline of the approval process

Any activity that infringes an airport's prescribed airspace is called a **controlled activity**, and requires approval before it can be carried out. Controlled activities include the following:

- permanent structures, such as buildings, intruding into the prescribed airspace
- temporary structures such as cranes intruding into the prescribed airspace
- any activities causing intrusions into the prescribed airspace through glare from artificial light or reflected sunlight, air turbulence from stacks or vents, smoke, dust, steam or other gases or particulate matter.

Carrying out a controlled activity without approval is an offence under Section 183 of the Airports Act 1996, and is punishable by a fine of up to 250 penalty units. It is an offence under Section 185 of the Act to contravene any conditions imposed on an approval. Under Section 186 of the Act it is an offence not to give information to the airport operator that is relevant to a proposed controlled activity.

International standards have been adopted which define sets of invisible surfaces above the ground around an airport. The airspace above these surfaces forms the airport's **prescribed airspace**. AvLaw has identified the Sydney Airport airspace surfaces relevant to the site as the following:

- Obstacle Limitation Surface (OLS),
- Procedures for Air Navigation Services – Aircraft Operations (PANS-OPS) surfaces;
- Combined Radar Departure Assessment Surfaces (Omni Directional);
- Radar Terrain Clearance Chart (RTCC) or Radar Lowest Sector Altitude (RSALT) surfaces.

The Regulations differentiate between **short-term** (not expected to continue longer than 3 months) and **long-term** controlled activities. The Regulations provide for the airport operator to approve short-term controlled activities, excluding PANS-OPS infringements, and for the DIRD to approve long-term controlled activities, or short-term controlled activities referred to it by the airport operator, including short-term infringements of the PANS-OPS surface. However, long term intrusions of the PANS-OPS surface are prohibited.

The heights advised in the application for approval must include all towers, masts, BMU, construction crane(s), and ancillary features. An application will be considered in two elements, one being for the building itself (inclusive of all features) and one for construction crane(s).

Each penetration of the OLS, PANS-OPS or RTCC has to be assessed against the effect on published Departure and Approach procedures and other matters. These include published survey data and Air Traffic Control (ATC) procedures and practices, including compatibility with the promulgated ATC RTCC that is used to safely vector aircraft in instrument meteorological conditions (non-visual). Each proposal has to be checked for proximity to published procedures to ensure statutory tolerances and safety buffers are maintained. The tolerances vary according to the type of navigation or aid being utilised and cover vertical, lateral and longitudinal aspects.

Timing to assess applications varies depending on the complexity of the assessment and the workload within the respective agencies at the time of receipt. AvLaw's experience suggests Proponent's should allow seven (7) months for project planning purposes with respect to processing time with Sydney Airport, Airservices Australia, CASA and the DIRD conducting their own assessments in succession. AvLaw recommends that applications for both building and crane height approval be made as early as possible.

3. Relevant stakeholders relating to controlled activity approvals

Applications to carry out a controlled activity which is defined as any permanent or temporary penetration of prescribed airspace are to be made to the airport operator in writing. The information required in the application must include:

- a description of the proposed controlled activity (building construction, crane operation etc.)
- its precise location (street address and grid reference)
- if the controlled activity consists of the erection of a building or structure:
    - the proposed maximum height of the structure above the Australian Height Datum (including any antennae, towers, BMU etc.), and
    - the proposed maximum height of any temporary structure or equipment (e.g. cranes) intended to be used in the erection of the structure
- the purpose of the controlled activity.

The airport operator will conduct the initial assessment of the application in terms of:

- whether the activity results in an intrusion into its prescribed airspace and is therefore a controlled activity,
- the extent of the intrusion, and
- the precise location of the development or activity.

The airport operator may approve the application itself if there is no intrusion of the prescribed surfaces, however it is required to invite the following organisations to assess or comment on an application if there is an intrusion:

- **the Civil Aviation Safety Authority (CASA)** for an assessment of the impact on aviation safety
- **Airservices Australia** for assessments of proposals resulting in a penetration of the PANS-OPS surface or temporary redirection of flight paths
- **the local council authority** responsible for building approvals
- **the Department of Defence** in the case of joint-user airports.

The final approving authority for penetration of prescribed surfaces is the Department of Infrastructure and Regional Development (DIRD) as specified in the *Airports Act 1996* and *the Airports (Protection of Airspace) Regulations 1996*. In making its determination, the DIRD is required to assess the respective assessments of the airport operator, Airservices Australia and CASA, however cannot issue an approval in the event CASA's assessment is not supportive of the application.

The approval process requires separate assessments of the permanent building structure and temporary construction crane(s). Applications can be made in advance of planning approval for both. CASA however does require detailed architectural drawings to be provided prior to completing its assessment.

4. Preliminary assessment of the proposed development activity against existing controlled activity restrictions, as applied to the published Sydney Airport prescribed airspace charts

Based on the site location provided by Stockland, interrogation of satellite imagery, OLS requirements, PANS-OPS limitations and RTCC stipulations, AvLaw's assessment of the heights above which an aviation approval is required has determined the following:

- The OLS over the site is the Outer Horizontal Surface at 156m AHD
- The PANS-OPS surface over the site is a horizontal plane at 335.2m AHD (1100ft)
- The Omni Direction Departure Surface is nominally 460m AHD (the Omni was decommissioned and removed from Sydney Airport in 2014)
- The RTCC limitation over the site is 1100ft AHD (335m)

The controlling operational surfaces over the site are the OLS, PANS-OPS and RTCC surfaces, with the OLS being penetrated based on the current proposed building height (inclusive of plant) of RL304.5m, hence triggering detailed aviation assessment.

A maximum building envelope including any protrusions from a building (e.g. masts, BMU etc.) must be included in the final height of the building itself for aviation approval, as does temporary construction crane activity.

The Planning Proposal seeks a building envelope at a maximum height of RL 304.5m, which will remain below the PANS-OPS and RTCC of nominally 335m AHD. Providing temporary construction crane(s) remains below the PANS-OPS and RTCC, current published flight operation surfaces will not be affected by any future proposed development at the site in accordance with the Planning Proposal.

5. Assessment of Planning Proposal on helicopter operations

The site is located approximately 13.75km NNE of Sydney Airport. There are a number of prescribed helicopter transit routes published in Aeronautical Information Publication (AIP) En Route Supplement Australia (ERSA) for helicopter operations in the Sydney Control Zone. These are included in the Coded Clearances and Operating Requirements for Sydney Airport, with the coded clearances containing the specific routes and prescribed altitudes to be flown.

The site is in the vicinity of other existing and proposed tall buildings and clear of specific helicopter transit routes. The RNSH Helipad is approximately 450 metres to the NW of the site beyond other proposed and existing tall buildings. Even though the Planning Proposal would facilitate a tall permanent building structure that may be classified as an obstacle, the helicopter operations are all conducted under Visual Flight Rules (VFR) whereby the pilot in command (PIC) is solely responsible for safe navigation clear of any obstacles.

Legislation requires the pilot of a helicopter to determine the safe take-off and landing approach taking into account all factors including aircraft performance, wind direction, obstacles, and emergency landing in the event of engine failure.

While individual flight paths are up to the helicopter pilot to determine, there are factors he/she will take into account specific to the RNSH Helipad operations, including:

- approach and take-off to the SW (clear of the site) is over Gore Hill Park providing for an emergency landing area in the event of engine failure at low altitude;
- approach and take-off to the NE (clear of the site) is over Naremburn Park, Artarmon Reserve, Bicentennial Reserve providing for an emergency landing area in the event of an engine failure at low altitude;
- approach and take-off to the SE (over the site) is over a highly populated existing dense low, medium and high rise development providing no emergency landing in the event of an engine failure at low altitude and adds a level of risk for operations in this direction; and
- information provided at helipads.org advises approach to be in the SW sector over Gore Hill Oval or alternate approach in the NE sector, and departure to be in the SW sector over Gore Hill Oval or alternative NE sector, all of which are clear of the site.

Therefore, AvLaw's assessment of helicopter operations in the vicinity of the site concludes the Planning Proposal will pose no increased safety risk to those that might already exist due to other obstacles in the area.

6. Summary

Development at the site in accordance with the Planning Proposal will involve significant penetration of the OLS which in this case AvLaw considers as not being problematic. Upon approval of the Planning Proposal and future detailed design that confirms final actual maximum building heights including all ancillary features and crane activity, the preparation of a complete aeronautical impact assessment will assist an application for requisite approvals to be given.

The Regulations require any decision by the DIRD to be made in the interests of the safety, efficiency or regularity of existing or future air transport operations into or out of the airport. An approval may be subject to specific conditions, which may concern how the controlled activity is carried out (e.g. hours of operation of a crane), or may require the building or structure to be marked or lit in a certain way as detailed in Manual of Standards (MOS) 139. These conditions must also be in the interests of the safety, efficiency and regularity of existing or future air transport operations.

AvLaw notes that penetration of the OLS for Sydney Airport over the site at 156m AHD will trigger aviation safety assessment by CASA and Airservices Australia, however if the proposed development including crane activity remain below the RTCC and PANS-OPS, aviation regulatory approval should be readily given.

Yours sincerely

Amin Hamzavian
Director