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## **PRELIMINARY AERONAUTICAL IMPACT ASSESSMENT: 383 KENT ST, SYDNEY**

Dear Michelle,

I refer to a request from Charter Hall for advice in relation to identifying airspace height constraints associated with a proposed request to submit a Planning Proposal to amend the Sydney Local Environmental Plan 2012 to amend the height of building provisions for 383 Kent St to allow for a building envelope for a future high rise tower up to 189.80m AHD and associated crane activity to 230m AHD.

Avlaw Aviation Consulting Pty Ltd (Avlaw) has conducted a preliminary aeronautical impact assessment of the maximum building and crane height restrictions at the site against prescribed airspace limits which cover the site. These limits exist due to necessary safety clearances (mandated in legislation) that must be provided between an aircraft and an obstacle. This letter provides details of the current airspace protection surfaces that cover the site which have been assessed following the provision of a brief containing proposed building and crane heights by the project team.

The critical (i.e. lowest) airspace protection surface which covers the site is the Outer Horizontal Surface of the Obstacle Limitation Surfaces (OLS) for Sydney Airport at 156m AHD. As this surface will be penetrated both permanently by the building and temporarily by two cranes, each will be classified as a "controlled activity" and will require aeronautical assessment and approval by aviation stakeholders. Avlaw has determined that the penetration of the OLS by the building and cranes in this instance should not be problematic because the site is clear of the approach and take-off areas for all of Sydney Airport's runways as well as being "shielded" by Sydney Tower (Centrepont) to a height of 280m AHD at the site.

The vertical distance between the maximum building height of 189.80m AHD and the next lowest airspace protection surface (i.e. PANS-OPS at 283.8m AHD) is 94m, providing a generous buffer for temporary crane activity before any other airspace protection surfaces

are penetrated. However, if shielding is to be applied, then the still generous vertical buffer would be reduced to 90.2m AHD. This conclusion is based on the findings of Avlaw's independent modelling of the airspace over site (Figure3) rather than relying solely on the charts published by Sydney Airport, which show the PANS-OPS surfaces at a greater height (Figure 2).

With respect to helicopter operations in proximity to the site, Avlaw has determined that the airspace protected under the National Airport Safeguarding Framework (NASF) – Guideline H for Strategic Helicopter Landing Sites (SHLS) does not limit the currently proposed building and crane heights. This is due to the fact the site is laterally clear of the airspace protected under the guideline and in any case, approaches and departures at the nearest helipad (i.e. Royal Prince Alfred Hospital) are clear of the site. Avlaw is also aware that updated designs for a redevelopment of Royal Prince Alfred Hospital have been revealed by the NSW Government, but there is no reason to suggest there will be an more stringent restrictions resulting from that development proceeding. The proposed development is also shorter in height than that of existing surrounding buildings.

In summary, Avlaw's assessment concludes that the proposed envelope and associated crane activity should receive aviation approval.

## 1. Introduction

This Preliminary Aeronautical Impact Assessment has been prepared by Avlaw in support of a Planning Proposal to amend the *Sydney Local Environmental Plan 2012* (Sydney LEP). This report has been prepared on behalf of Charter Hall (the Proponent) and it relates to a single development lot identified as Lot 1 in DP 778342 or 383 Kent Street, Sydney (the site).

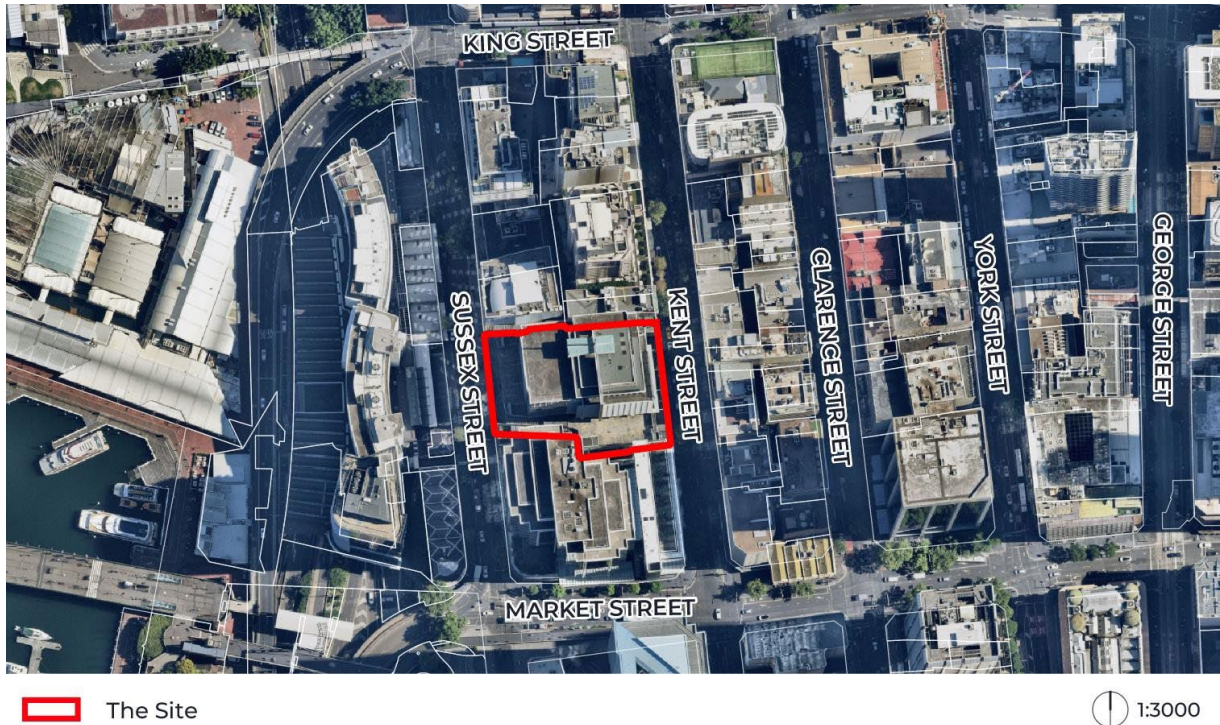


Figure 1: Aerial Map (Source: Nearmap, edits by Ethos Urban)

The purpose of this Planning Proposal is to amend the site's maximum Height of Building development standard and maximum Floor Space Ratio (FSR) development standard to unlock additional floor space to be used exclusively for employment generating land uses, consistent with the vision and intent of the *Central Sydney Planning Strategy* (CSPS) for tower cluster sites. This Planning Proposal will also seek to facilitate significant public benefits through additional site activation by way of a new pedestrian through-site link, shared loading dock facility and delivering on sustainable initiatives to contribute to the City of Sydney's vision to achieve net zero energy buildings.

The proposed Sydney LEP amendment is part of the broader redevelopment plan for the site to demolish the existing structure on the site (including the existing 10 storey car park), and construct a new 42 storey commercial office tower with a total maximum FSR of 20:1 (circa 73,000m<sup>2</sup> GFA).

## 2. Indicative Reference Scheme Overview

The reference scheme supporting the Planning Proposal and site specific DCP can be described as follows:

- Demolition of the existing building, including removal of the over 800 capacity public car park.
- Construction of the following:
  - New 42-storey office tower comprising a total FSR of 20:1, up to a height of RL 189.60 (approximately 170m above Kent Street and 180m above Sussex Street).
  - New premium-grade commercial floorspace with an approximate GFA of circa 73,000m<sup>2</sup>.
  - New through-site link connecting Kent and Sussex Streets, including public art activation.
  - New ground floor activation opportunities, including approximate retail GFA of circa 640 m<sup>2</sup>.
  - 2 levels of basement, comprising:
    - Basement Level 1 facilitating 72 car parking spaces; and
    - Sussex Street ground level shared loading dock facility including SRV and MRV short term stay bays to service retail tenancies within buildings along Kent Street (located between Market Street and King Street).
  - New end of trip facilities below the Kent Street ground level.

### 3. Airspace Height Controls

As a signatory to the *Chicago Convention 1944*, Australia adopts International Civil Aviation Organisation (ICAO) Standards and Recommended Practices (SARPs) with respect to airspace which define sets of invisible surfaces above the ground around an airport. The airspace above these surfaces forms the airport's **prescribed airspace**. With respect to Sydney Airport, the following airspace protection surfaces have been "declared" by the **Department of Infrastructure, Transport, Regional Development, Communications and the Arts** (Department) and are therefore enshrined in legislation:

- OLS;
- Procedures for Air Navigation Services – Aircraft Operations (PANS-OPS) surfaces;
- Radar Terrain Clearance Chart (RTCC)/Radar Lowest Sector Altitude (RLSALT) surfaces; and
- Combined Radar Departure Assessment surfaces.

#### 4. Airspace Approval Process

Part 12 of the *Airports Act 1996 (Act)* and the *Airports (Protection of Airspace) Regulations 1996 (Regulations)* establish a framework for the protection of airspace at and around airports. The Act defines any activity resulting in an intrusion into an airport's prescribed airspace to be a "controlled activity" which cannot be carried out without approval. 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; or
  - 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.

The Regulations differentiate between short-term (not expected to continue longer than 3 months) and long-term controlled activities. The Regulations allow for the airport operator to approve short-term penetrations of the OLS under delegation from the Department following consultation with the Civil Aviation Safety Authority (CASA) and Airservices Australia (Airservices).

With respect to long-term penetrations (e.g. a building penetrating the OLS), the airport operator is required to invite the following stakeholders to assess or comment on an application if there is an intrusion into prescribed airspace:

- **CASA** for an assessment of the impact on aviation safety;
- **Airservices** for assessments of proposals resulting in a penetration of surfaces including PAPI, PANS-OPS etc.;
- **the local council authority** responsible for building approvals; and
- **the Department of Defence** in the case of joint-user airports.

The final approving authority for all long-term penetrations of the OLS (as is the case in this instance) is the Department as specified in the Act and the Regulations. In making its determination, the Department is required to assess the respective assessments of the airport operator, Airservices and CASA. The Department cannot approve long-term penetrations of the OLS in the event CASA's assessment is not supportive of the application, however that is not expected to be the case in this instance.

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, scaffolding) intended to be used in the erection of the structure

Each penetration of prescribed airspace has to be assessed against the effect on published

departure and approach procedures and other matters relating to the management and use of airspace surrounding airports. 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 by aircraft and cover vertical, lateral and longitudinal criteria.

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, however aviation stakeholders do require detailed architectural drawings and specific dates when penetrations of any airspace surfaces will commence and end to be provided prior to completing its assessment.

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 on previous tall building projects suggests proponents should allow at least three months for Sydney Airport, Airservices, CASA and the Department to conduct their own assessments in succession. Complex applications such as those which are seeking penetrations of PANS-OPS surfaces are more likely to take longer to assess, however, that is not the case in this instance. In any case, Avlaw recommends that applications for both building and temporary structures be made as early as possible to avoid delays in the receipt of DA approvals and subsequently construction.

Carrying out a controlled activity without approval is an offence under Section 183 of the 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.

### 5. Preliminary Aeronautical Impact Assessment

Based on the site location provided, interrogation of satellite imagery, OLS requirements, PANS-OPS limitations as well as RTCC stipulations, Avlaw's assessment of the heights of airspace protection surfaces covering the site and the respective clearance or penetrations of each by the proposed building (189.8m AHD) and cranes (230m AHD) are tabulated on the following page:

Sydney Airport			
Airspace Surface	Height (m AHD)	Clearance/Penetration (building at 189.8m AHD)	Clearance/Penetration (2 x cranes at 230.0m AHD)
OLS	156	33.8m	74m
PANS-OPS	>283.8	94m (minimum)	53.8m (minimum)
RTCC	335.28	145.48m	105.28m

Figure 2: Summary of prescribed airspace assessment findings



Figure 3: Extract from draft Sydney Airport OLS Chart (2018)





Figure 4: Extract from draft Sydney Airport PANS-OPS Chart (2017)

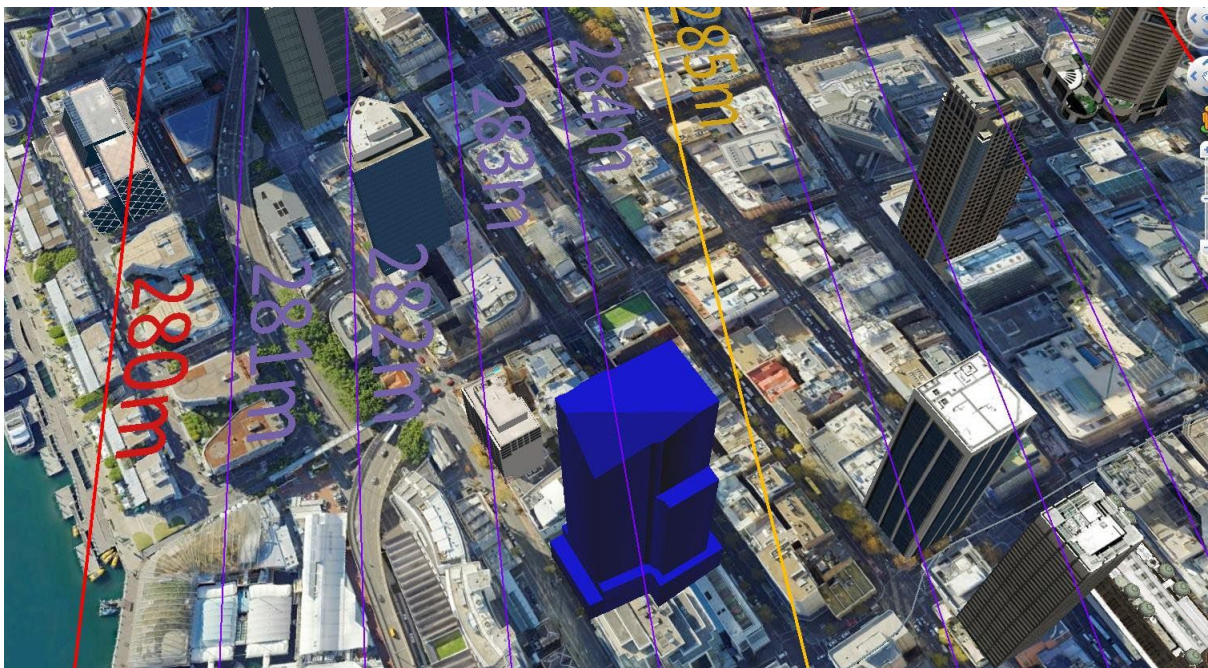


Figure 5: Avlaw's model of the PANS-OPS over the site



Figure 6: Extract from Combined Radar Departure Assessment Surfaces (2015)

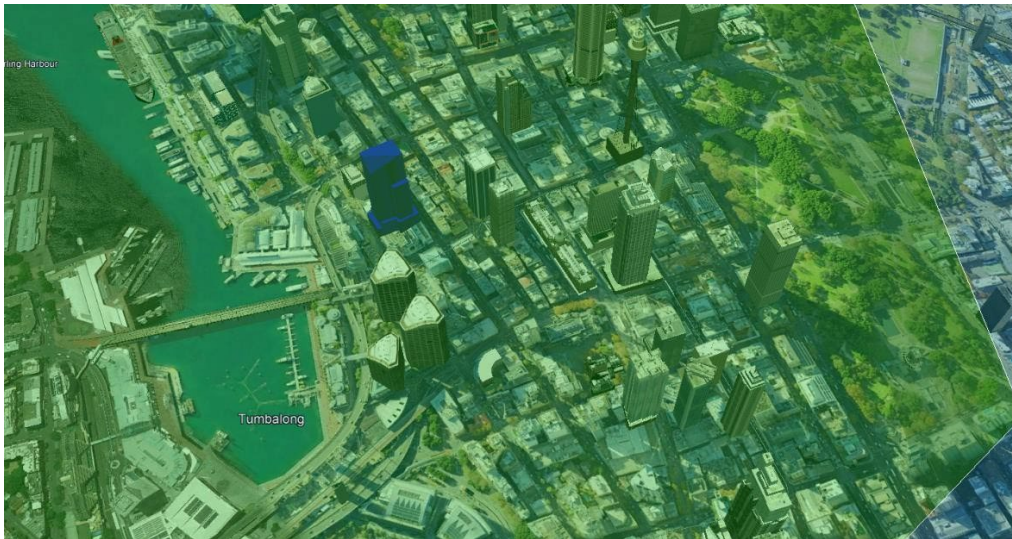


Figure 7: Avlaw's model of the RTCC over the site (335.35m AHD horizontal plane in green)

Since the OLS is proposed to be penetrated by the building structure and two temporary construction cranes, each will therefore be considered a controlled activity and trigger detailed aviation assessment. A maximum building envelope including any protrusions from the 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. Avlaw notes that there is a generous vertical buffer (i.e. 94m) above the maximum building height and the airspace protection surfaces above the OLS for temporary crane activity without penetrating any other airspace protection surfaces that would make the approval process more complex.

## 6. Helicopter Operations

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. The proposed development is clear of specific helicopter transit routes, with all helicopter operations assessed conducted under Visual Flight Rules (VFR) whereby the pilot in command (PIC) is solely responsible for safe navigation clear of any obstacles.

### 6.1 Coded Clearances and Sightseeing Flights

The nearest corner of site is located approximately 9,095m NE of Sydney Airport aerodrome reference point. 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 coded clearances published in AIP ERSA for helicopter transit lanes to and from Sydney Airport are clear of the site.

### 6.2 Hospital Helipads

A [National Airport Safeguarding Framework \(NASF\)](#) Guideline H has been issued regarding protection of what are being termed *Strategic Helicopter Landing Sites (SHLS)*. Under the guideline, hospital helipads would be considered as SHLS and therefore protected from obstacles being erected in close proximity to it. The guideline provides for 140m wide rectangular steps in the direction of approach/take-off in 500m increments until reaching 125m above the SHLS which would be protected from obstacles such as buildings and cranes. The figure below has been sourced from the guideline and illustrates this proposed protection of SHLS and the heights above which assessment is triggered.

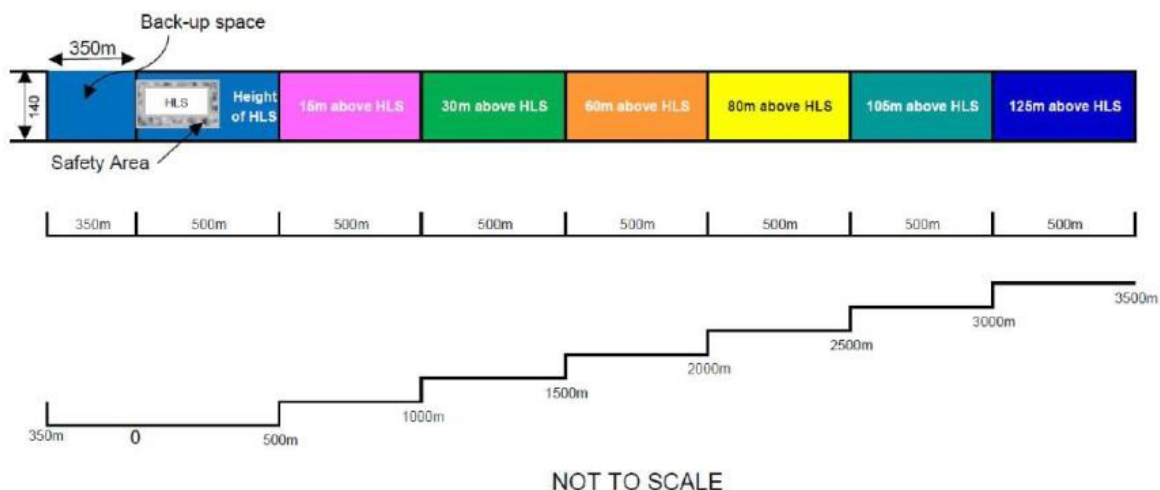


Figure 8: Referral trigger for SHLS

The Royal Prince Alfred Hospital Helipad is located 2,859m to the SW of the site, therefore within the 105m clearance step above the HLS. The declared elevation of the helipad is 29m AHD, so the NASF clearance step is 134m AHD if the direction of approach/take-off was in line with the site. Information provided to helicopter pilots for Royal Prince Alfred Hospital Helipad is that both approach and

departures are to the north and south, so the NASF guideline does not apply with respect to the site. Avlaw is also aware that updated designs for a redevelopment of Royal Prince Alfred Hospital have been revealed by the NSW Government, but there is no reason to suggest there will be an more stringent restrictions resulting from that development proceeding. In any case, proposed building and crane heights at the site are below surrounding taller buildings and therefore the any changes to helicopter activities should not present an impediment to this development proceeding.

## **7. Rationale for obtaining approval**

The Regulations require any decision by the Department 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. Any controlled activity 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 temporary 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.

The proposed development at the site will involve penetration of the Sydney Airport OLS by the building as well as two cranes which in this case Avlaw considers as not being problematic because allowing it to proceed to the heights assessed in this letter will not have adverse impacts on the safety, regularity or efficiency of aircraft operations at Sydney Airport and therefore should be approved.

In considering the application, aviation authorities will consider the principle of "shielding" that specifies that if an obstacle is below a 10 per cent downward slope from an existing obstacle, it is assessed as not being a hazard. This principle over-rides other airspace limitations and can expedite an application. The site is shielded to heights as tabulated below:

<b>Exiting Obstacle</b>	<b>Obstacle Height (m AHD)</b>	<b>Distance from obstacle to opposite side of site</b>	<b>Shielded height at site (m AHD)</b>
Sydney Tower (Centrepoint)	327	465	280.5

*Figure 9: Summary of shielding calculations at the site*

On the basis of shielding, Avlaw considers an aviation approval for building and crane heights can be expedited, however Avlaw suggests still allowing for at least three (3) months as previously mentioned.

Helicopter operations have also been assessed and they too will not be impacted adversely if the development proceeds.

### **8. Future controlled activity approval requirements**

The proposed development at the site will require two separate controlled activity applications because of the penetration of the OLS by the building and cranes. As mentioned in section two (2), Avlaw's experience suggests Proponents should allow a minimum of three (3) months processing time for Sydney Airport, Airservices, CASA and the Department to complete conducting their assessments of proposed controlled activities.

Given the project is currently at the Planning Proposal stage whereby no detail of the building's final design or its construction methodology is available, it is Avlaw's recommendation that referral to Sydney Airport only take place when drawings of the final design and details relating to construction cranes (e.g. staging, periods of penetration) can be included in the application.

Yours sincerely,



**Amin Hamzavian**  
Managing Director