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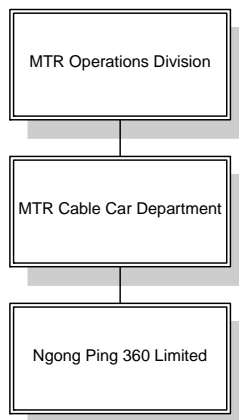
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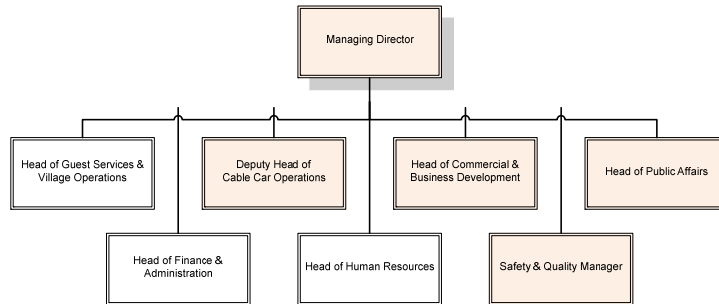
# The Relationship between MTR and NP360

## The Relationship Between MTR and NP360

- A subsidiary company of MTR Corporation



## NP 360 Limited Organisation Chart



Ngong Ping 360 Limited Organisation Chart

## MTR Safety Governance

## MTR Safety Governance



## MTR Safety Governance

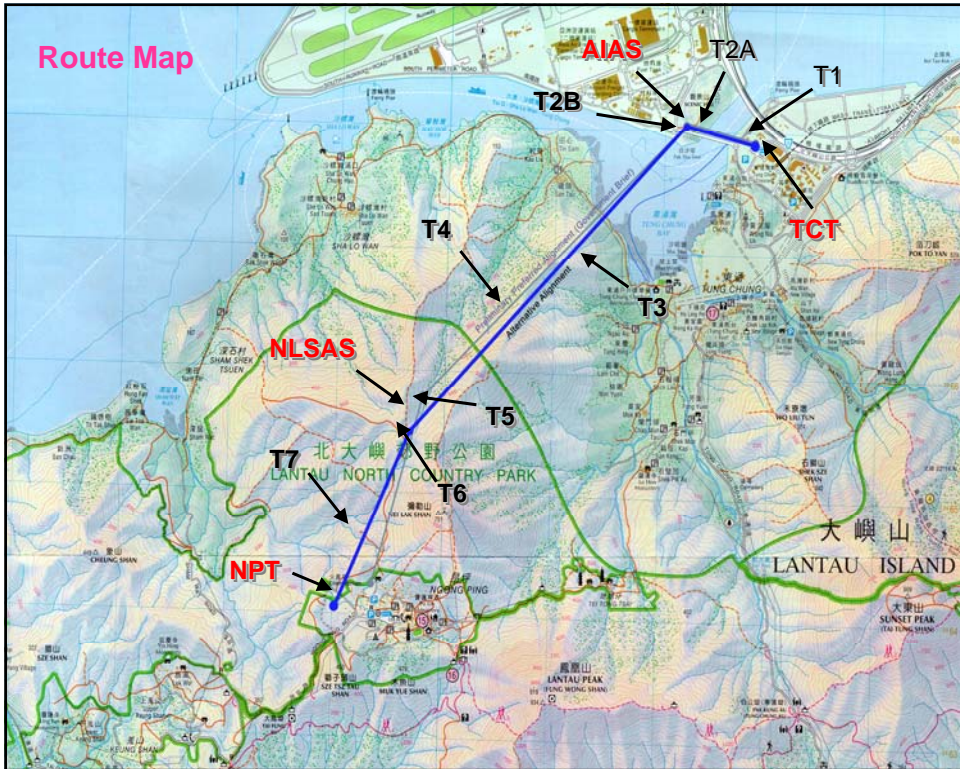
- Corporate Safety Governance (CGI 264)
- NP360's monthly Safety Management Committee meeting minutes to MTR's Operation Director (Chairman of NP360)
- NP360's Quarterly Safety Management Report to MTR OSMC-HK (Operating Agreement)
- Half yearly review on Enterprise Risk items
- Regular audit by MTR S&Q Department (Safety Management)
- Audit by MTR Internal Audit Department (Enterprise Risk)

# The Ngong Ping 360 Cable Car System

## The Ngong Ping 360 Cable Car System

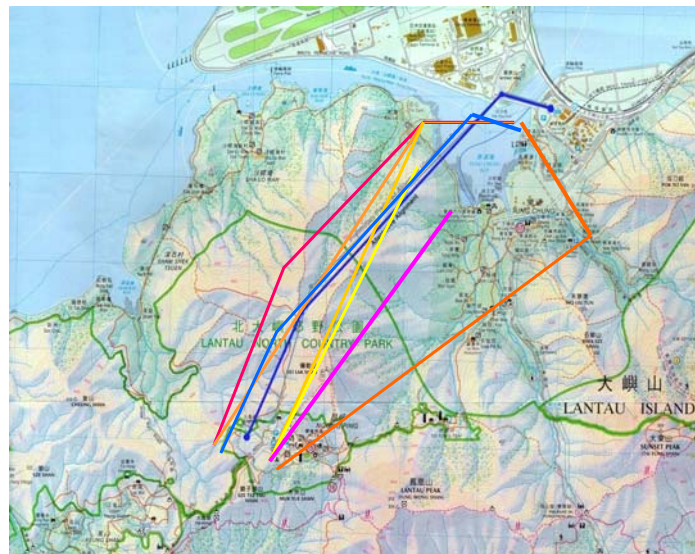
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- **System alignment**
- **System configuration**





Seven route options were considered during project design phase





Mode of Transportation during construction



## The Ngong Ping 360 Cable Car System

- **Bi-cable Circular System**
  - Track rope: 70mm dia.
  - Haul rope: 42mm dia.
- **Total Length: 5.7km**
- **2 Terminals: (TCT, NPT)**
- **2 Angle Stations: (AIAS 60°, NLSAS 20°)**
- **Number of cable towers: 8**





## The Ngong Ping 360 Cable Car System (Continued)

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- **Max. span: 1.5km (over Tung Chung Bay)**
- **Max. elevation: 585m (T6)**
- **Tallest tower: T2B (55m)**
- **System capacity: designed for 3500pphpd**
- **Two driving sections:**
  - **Section 1 (TCT – AIAS)**
  - **Section 2 (AIAS – NPT)**



## The Ngong Ping 360 Cable Car System

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- **Design line speed: 7m/s (max) = (25.2km/h)**
- **Current operation speed: 5m/s = (18km/h)**
- **Station speed: 0.25m/s**
- **Design operating against wind speed: 80km/h**

## The Pro and Con of Bi-cable system

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### Pro:

- High carrying capacity
- Higher line speed
- Higher wind resistance
- Less intermediate towers (longer span)

### Con:

- Higher system and installation costs
- Bigger cable tower required

## The Cabins

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- Number of cabins: 112 – 1
- Capacity for each cabin: 17 persons
- Each cabin is equipped with:
  - Solar batteries for PA system
  - Cabin light
  - Emergency facilities

## Power Supply

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- **3 in-feed locations from CLP (11kv)**
- **TCT (Standby diesel generator)**
- **AIAS (Dual feed for traction power only)**
- **NPT (Standby diesel generator)**

## Development of Safety Management System for NP360

## SMS Development Process - General

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- **Started in Mid-August 07**
- **Limited knowledge on cable car system / operation**
- **The scope of SMS**
- **Development Strategy – fit for purpose**
- **SMS Implementation Plan**

## SMS Development - Scope of SMS

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- **Cable Car System / Operation**
  - Operations and maintenance
  - Rescue Operations
  - Rescue Trail
- **Guest Services & Village operations**
  - Guests safety
  - Traffic safety
  - Crowd management
  - Security
  - Tenants
  - Visitors
  - Marketing
- **Occupational Safety & Health**

## SMS Development (1)

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### 1<sup>st</sup> phase - Before station at NP360

- Define the scope of SMS
- Develop Safety Management System
- Set up Safety & Health Policy
- Set up safety committees
- Prepare SMS Implementation Plan

## SMS Development (2)

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### 2<sup>nd</sup> phase - In position (Mid Sept. 07)

- Conduct gap analysis
- Conduct safety survey
- Deliver SMS briefings
- Allocate safety responsibilities to staff (SR Card)
- Develop / implement safety promotion program
- Set up Risk Management System

## SMS Development (2)

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### 2nd phase - In position (continued)

- **Set up accident / incident reporting system**
- **Set up accident / incident data base**
- **Define roles and functions of each department**
- **Establish central Fault Reporting Centre**
- **Promote a “Reporting Culture”**
- **Conduct accident investigations**
- **Introduce “Landlord” concept**

# NP360's Safety Management System and Implementation

## NP360's SMS and Implementation

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- **Five key components**
- **Twelve Safety Elements**
- **Meets MTR's Corporate Safety Governance**
- **Meets Aerial Ropeway Safety Ordinance**
- **Meets F&IU Regulations**

## NP360's SMS and Implementation (Continued)

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### Five key components

- **Safety & Health Policy**
- **Safety Organisations**
- **Safety Management Process**
- **Safety Responsibilities**
- **12 Safety Elements**

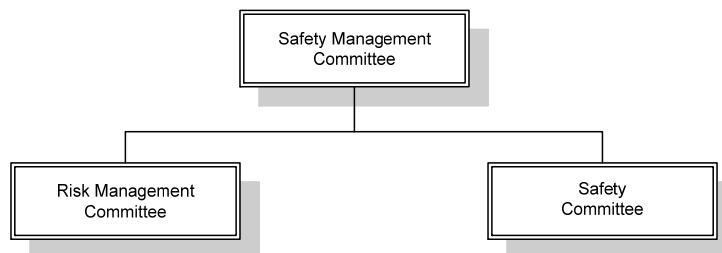
## NP360 Safety & Health Policy



### Two main objectives

- **Safety Culture**
- **Continuous Improvement**

## NP360 Safety Organisations



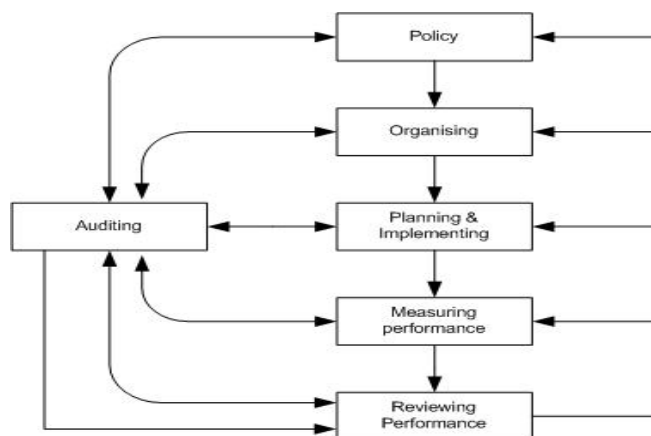
NP360 safety organisations



## Issue raised in Safety Committee



## NP360 Safety Management Process



HSE Health & Safety Management Model - HSG(65)

### Double-sided Safety Responsibility Card

INGONG 評PING 360	INGONG 評PING 360
<p>你必須履行的安全責任，包括：</p> <ol style="list-style-type: none"><li>一. 明白公司的安全及健康政策。</li><li>二. 清楚理解並嚴格遵守相關的職業健康、安全、環保、公共衛生的法規、指引及工作程序。</li><li>三. 除獲授權外，切勿使用或操作任何工具、機械或設備。</li><li>四. 時刻警覺機械的移動部位，並按不同工作環境，配戴適當的個人防護衣物或裝備。</li><li>五. 高空工作時，使用適當的安全措施（如配帶安全帶），避免人體下墮，並留心隨身工具，慎防物件飛脫。</li><li>六. 清楚火警逃生路線和程序。</li><li>七. 提醒他人（員工及旅客）避免犯險。</li><li>八. 如發生事故（包括幸免事故），務必即時報告主管。</li></ol>	<p>Be responsible, be safe. You should:</p> <ol style="list-style-type: none"><li>1. understand the Company's Safety and Health Policy;</li><li>2. understand and fully comply with the relevant Regulations, Guidelines, Procedures and Work Instructions on occupational health, safety, environmental and hygiene issues;</li><li>3. use tools or operate machineries and equipment only upon authorization;</li><li>4. always be aware of mechanical moving parts; use proper personal protective clothing and equipment in different working environment;</li><li>5. when working at height, wear safety harness and take measures to prevent falling of objects;</li><li>6. familiarize with yourself fire evacuation routes and emergency procedures;</li><li>7. warn others (staff and guests) from placing themselves at risk; and</li><li>8. report all incidents (including near-miss) to your supervisor.</li></ol>
香港總公司 (中文) : Subsidiary of IFC Corporation Limited	香港總公司 (英文) : Subsidiary of IFC Corporation Limited
R1/800/07	

## NP360's Safety Management System (Continued)

### Twelve Safety Elements

- Information and Communication
- Asset Management
- Safe System or Work
- Risk Management
- Human Resources
- Contractors and Visitors
- Fire & Security
- Emergency Preparedness and Response
- Undesired Event Reporting and Investigation
- Funding for Safety
- Performance Monitoring
- Safety inspection, Review and Audit

## Twelve Safety Elements

### 1. Information and Communication

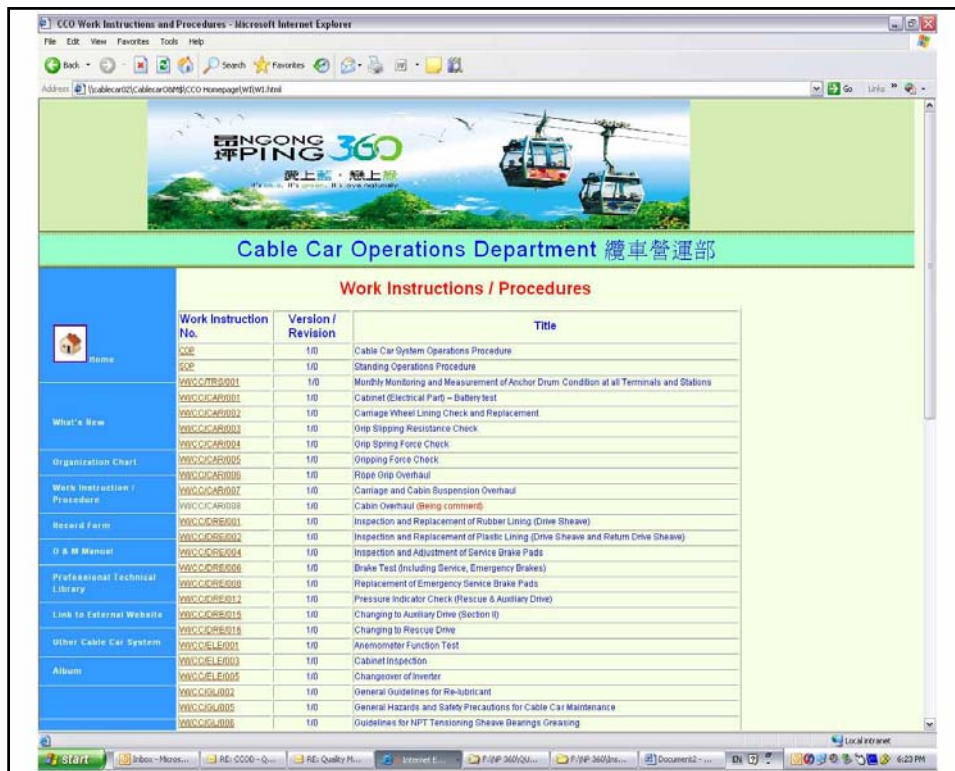
- Safety information to staff
- Safety Information to Guests
- Communication to Guests
- Communication with Staff
- Safety promotion
- Communication with Stakeholders



NGONG  
坪PING 360

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## Twelve Safety Elements (continued)

### 2. Asset Management

- Acquisition of assets
- Operation and Maintenance
- Modifications and Replacement
- Safety Critical Item / System
- Duplication of Data
- Public Health & Hygiene





**Rescue Trail –  
Stone Paving**



Rescue Trail - week 36-45  
boardwalk between 74-75 in progress

**Rescue Trail –  
Boardwalk**

## Twelve Safety Elements (continued)

### 3. Safe System of Work

- **Hazard Identification and Control**
- **Safe Methods of Working**
- **Protection from Occupational Health Hazards**
- **Personal Protection Equipment**





### Occupational Hazards



## Twelve Safety Elements (continued)

### 4. Risk Management

- Risk Management System
- Change Management

## Twelve Safety Elements (continued)

### 5. Human Resources

- Recruitment and Promotion
- Safety Induction
- Identification of Training Needs
- Safety Training
- Records
- Motivation
- Hygienic Environment







## Twelve Safety Elements (continued)

### 7. Fire & Security

- Fire Prevention and Control
- Security of Property
- Security of Information
- Terrorism

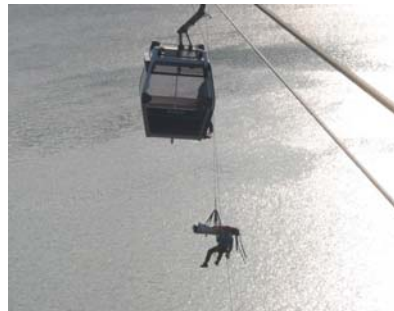


Annual  
Fire Evacuation Exercise

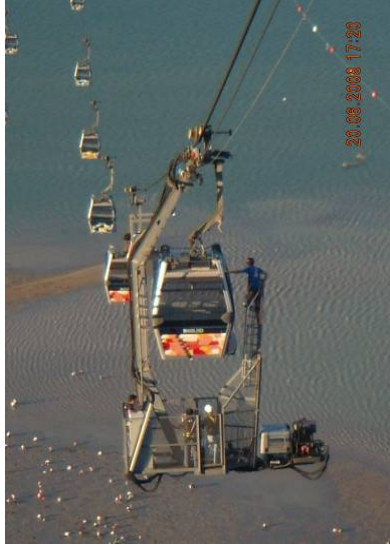
## Twelve Safety Elements (continued)

### 8. Emergency Preparedness & Response

- Emergency Procedure
- Evacuation
- Rescue Operation
- First Aid
- Drill & Exercise



## Horizontal Rescue



## Twelve Safety Elements (continued)

### 9. Undesired Event Reporting & Investigation

- Reporting
- Investigation
- Notification to Statutory Bodies
- Lesson Learnt



## Twelve Safety Elements (continued)

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### 10. Funding for Safety

- **Safety Budgeting**

## Twelve Safety Elements (continued)

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### 11. Performance Monitoring

- **Setting Safety Targets**
- **Monitoring & Analysis**
- **Continuous Improvement**

## Twelve Safety Elements (continued)

### 12. Safety Inspection, Review and Audit

- Inspection Program
- Follow-up Action
- Record
- Inspection by S&Q
- Safety Review & Audit
- Safety Management Review



## Implementation of SMS in NP360

## Implementation of SMS in NP360

- Develop Safety Management Procedures (e.g., Risk Control Procedure)
- Deliver training on Risk Management
- Refine Risk Matrix
- Implement Safety Inspection Programme
- Follow up actions arising from various reviews, audits prior system reopening
- Coordinate with MTR on Safety Audits and follow up actions
- Safety promotion theme “我和安全有個約會” “I have a date with Safety”
- Launch “Safety Ambassador” Scheme



## Safety Ambassador Scheme




## Monthly Safety Promotion Poster

昂GONG 坪PING 360  
昂坪 360 安全、健康及環保  
2008年 9月


### 前車之師

八月我們的同事只有一宗意外事故，現在簡單介紹這宗意外事故如下。

意外發生的一個下午的晚上，維修部同事在一段樓梯上作起樓梯測量工作(圖一)，而用於作樓梯之熱氣起重器失手(圖二)在靜止狀態下突然啟動而撞倒一位同事導致其受到傷害。



圖一




圖二

上述事故之主要成因還在調查中，但從基本營運安全上我們也需留意：

- 所有吊重器材必須嚴格按例接受定期安全檢驗。
- 必須知道吊重器材之安全負重及能否吊運該等吊運之物品重量。
- 吊運前應檢查吊重器材是否有損壞。
- 禁止吊運區禁止進入。

在八月份報章上得知本港共有二宗關電意外而致或有兩名工人死亡。



兩名死亡意外皆是在進行有關電力工程時而引起。第一宗致命意外發生在商場內安裝分體冷氣機時工人誤觸其它帶電之電線。第二宗致命意外是一名工人在穿牆一線疏忽地碰了電的金屬網時發生。

在預防關電時我們必須知道：

- 只有合資格人士才可處理有關電力維修，切勿私下處理。
- 在對任何電動用具之安全有疑問時先切斷電源，例如電線外皮、線纜護套等。
- 對所有絕緣外層之電線管應視為帶電，切勿觸摸。

安全及品質部

## Monthly Lesson Learnt Poster

**SMART Ideas Scheme (SIS)**  
好建議計劃

Your SMART Ideas would turn a good day and make NP360 even better. Why not scratching your innovation and submitting them to SIS?

**S** Seek innovation  
**M** Make good things happen  
**A** Achieve pride  
**R** Respect for individuals  
**T** Teamwork

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## Smart Ideas Scheme

## Zero Defect & Every Minute Counts

**Objective for Cable Car Operations Department**  
纜車營運部之目標

零故障，主動堅守無用拖；  
爭分秒，20分鐘內要做到。

**ZERO DEFFECT** - be proactive, get it right the first time and every time  
**EVERY MINUTE COUNTS** - act fast and responsive for recovery within 20min







Now

### Reaching for the sky

SCMP 2 Oct 08

How the cable car has fared under the two operators	Skyrail	MTR
Operating period	9 months	9 months
Incidents causing service suspension or delays above 30 minutes	11	4
Longest service disruption with passengers trapped in cabins	3 hours	1.5 hours
Passengers served	1.5m	1.1m+

SOURCES: SCMP ARCHIVES, NGONG PING 360 PHOTO: DAVID WONG SCMP GRAPHIC

# Challenges

## Challenges

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### People

- **Staff's feeling on change of management**
- **Staff's morale, mindset**
- **Competence**
- **Selling of SMS, risk management concept**
- **Staff working attitudes and habit**
- **OSH hazards**
- **Supervision**

## Challenges (continued)

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### System

- **Geographic locations**
- **Require many Labouring work**
- **Equipment / parts wear and tear**
- **Safety and reliability causing stakeholders' concern**

## The Differences in Applying SMS in MTR & NP360

## The Differences in Applying SMS in MTR & NP360

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- **Time of Implementation**
- **Management Style**
- **Transportation vs. Tourism**
- **Industry norm**
- **System Complexity**
- **Operations Environment**

## The Differences in Applying SMS in MTR & NP360 (continued)

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- **Documentation vs. practices**
- **Authority's participation**
- **Business consideration**
- **The role of Safety & Quality Department**
- **Professionalism**
- **Resource**

# The Way Forward

## The Way Forward

NP360 Will focus on:

People

System

Asset

### To Achieve MTR Standard

- Competent people
- People devotion to the job
- Culture of attention to details, can do and continuous improvement
- Robust management systems in action
- Risk based approach
- Best practice in asset management

# Thank You

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