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Introduction

Norman Disney & Young (NDY) is an innovative and diverse engineering consultancy, with a commitment to building a better future through excellence in sustainable design.

Established in 1959, we have a long and proud history of offering an extensive range of engineering services, and delivering award-winning landmark projects.

For over 60 years, we have been at the forefront of innovation and we actively embrace the key role that engineering can play in minimising environmental impact. We recognise that our clients and their projects are unique, and we tailor our services and designs to suit individual client requirements.

With over 600 people in offices across Australia, New Zealand, Canada, the United Kingdom and Asia, we offer clients access to the highest quality expertise supported by a depth of knowledge and experience that few firms can rival. In the engineering services industry, this makes us a provider of choice.

We offer engineering consulting services across a wide range of market sectors including buildings, defence, health, industrial, mission critical, transport and utilities.

The success we have achieved is due to our people: highly skilled, passionate and engaged individuals, with a highly developed sense of teamwork.

We are proud of our achievements including contribution to a range of iconic award-winning projects. On all projects large and small our commitment is to working with our clients and project stakeholders to deliver high quality, sustainable outcomes.

In January 2018, NDY greatly expanded this engineering and design expertise by joining Tetra Tech, Inc., a global alliance offering consulting, engineering, and technical services.

With a purpose of 'Leading with Science', and more than 20,000 associates in 450 offices around the globe, Tetra Tech enhances NDYs delivery of smart and sustainable solutions to clients through a much larger global network of experts.

I hope you enjoy this insight into our company.

A key element of our company's vision is "sustaining deep and trusting relationships with our clients".

Stuart Fowler | Chief Executive Office Norman Disney & Young



Our **values**

Excellence

Do it once, do it well

Leadership

Lead in our profession, industry and the community

Integrity

Treat others as we wish to be treated

Collaboration

Listen, share and contribute

Accountability & Ownership

Understand the impact of our actions and own the outcomes

Innovation

Inspired creativity to challenge the norm

Our purpose is making spaces work

Our vision

To enhance the lives of others, by engineering outstanding projects, mindful that every project matters

To sustain deep and trusting relationships with our clients, through solving their problems and serving them with utmost reliability

To engage our people with meaningful, rewarding and inspiring opportunities.

Our ethical statement

NDY has a proud tradition of upholding the highest ethical standards in the manner by which we conduct ourselves as a company. Read our ethical statement at www.ndy.com/about-us/our-ethical-statement



What we do

As consulting engineers, our purpose is making spaces work. We listen to the unique requirements of each client, and tailor our services accordingly to every project.

Our collaborative approach to excellence and innovation are core values at NDY. We consistently deliver best practice sustainable solutions to achieve our clients' objectives.

Clients come to NDY because they want quality. We take ownership and provide clear recommendations while consulting with the utmost integrity.

Most of all, clients come to us because we listen. We look forward to better understanding your business and collaborating with you to achieve successful outcomes.

Our markets

- > Civic
- > Education
- Health
- > Industrial
- Mission Critical
- Offices
- > Residential & Hotels
- > Retail
- Transport

Our services

- Acoustics
- Asset Performance
- Audio Visual
- > BIM (Building Information Modelling)
- Communications
- > Controls & Integration
- > Electrical
- Fire Engineering
- > Fire Protection
- Hydraulics

- ICT Consultancy
- Interiors
- Mechanical
- > NDYLIGHT (Lighting Design)
- > Property Consultancy
- > Security
- Structural & Civil
- Sustainability
- Vertical Transportation





HEAR FROM OUR PEOPLE ABOUT HOW THEY ARE MAKING SPACES WORK

www.ndy.com/ourpeople

Our **people**

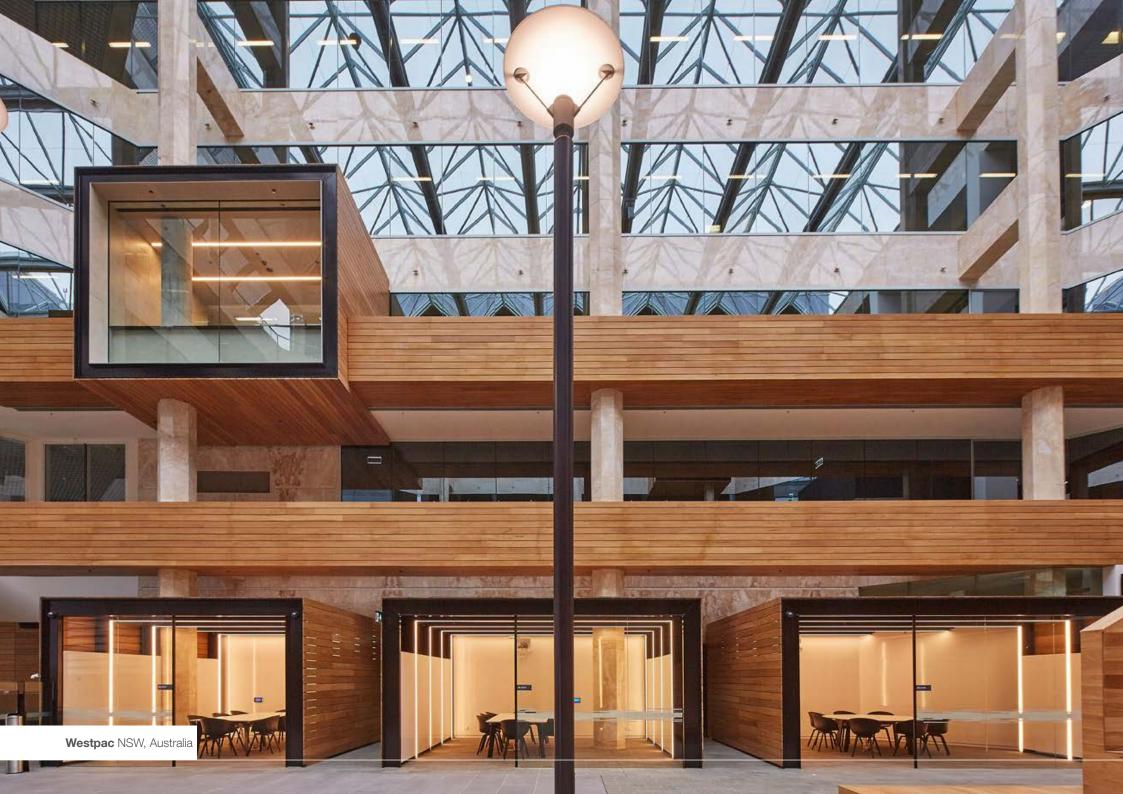
Our most valuable assets are our capable and enthusiastic staff. Every member of our team actively contributes to our success, and the success of our clients' projects.

NDY people have an enviable level of specialist skill and a focus on providing high-level customer service, understanding the needs of our clients and producing quality engineering deliverables on time and within budget.

Across all projects NDY people exhibit a commitment to:

- Having a clear understanding of market conditions in each operating location to provide clients with accurate advice on costs and programming imperatives
- > Teamwork and collaboration throughout all phases of the project from concept design to commissioning and handover
- › Applying practical Ecologically Sustainable Design (ESD) principles
- > Innovative engineering design
- > In-depth understanding of design standards and proven approaches
- > Practical understanding of installation practices
- Universal adoption of 3D modelling techniques
- A responsive approach to collaborative working.

Our people embody the NDY brand and are key to the success of your project.



Our **services**

NDY offer a complete range of consulting engineering services, delivered by a highly qualified team that has experience on projects across the globe. Our people are continually adding to their qualifications and experience, and know when a conservative solution is required, and when a bold design is needed to make a statement. Our services are delivered with the following key focus points:

Understanding your business

Creating the right solution requires our people to develop a deep understanding of our client's business. Aligning our contribution with the values and goals of our clients ensures that NDY can design according to current, and future requirements.

Cost effectiveness

NDY strive to provide solutions that achieve the requirements of the project, while ensuring that the solution is financially viable. This applies to the building phase, and over the operational life cycle of the project.

Reliability

NDY value reliability across the scope of our services. Beyond providing robust designs and solutions our people are committed to providing our clients with a dependable partner in their projects.

Collaboration

Communicating with key stakeholders, such as owners, architects and builders, ensures that the design solutions proposed are feasible, cost effective, and fulfil the purpose of the building. NDY values a collaborative approach as a key tool across all stages of the project.

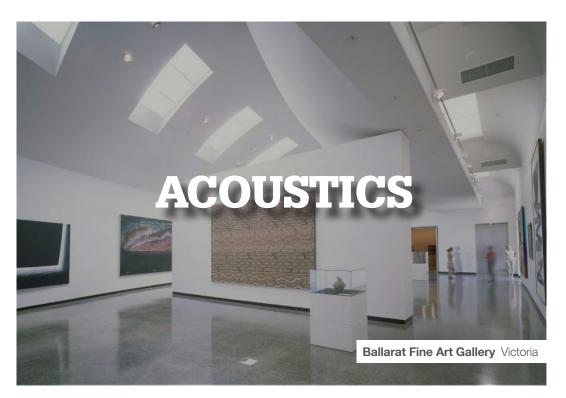
Responsibility

Taking ownership of a problem is at the very core of NDY's approach to engineering. Our people can be relied upon to address challenges and provide appropriate solutions.

Exceeding client expectations

Our people consistently strive to deliver outcomes that exceed the project parameters and delight our clients.







NDY's specialist acoustics division offers a range of acoustic consulting services, including architectural and specialised spaces, environmental noise impact assessments and the physical assessment of noise and vibration.

Our Acoustics services include:

Building acoustics

- Create a design for acoustic isolation, confidentiality and voice security
- Collate noise report submissions for local authority / development approval.

Environmental acoustics

 Conduct appropriate noise reports for Industrial, Road, Rail, and Air transportation projects. Creating a permanent noise and vibration monitoring system design.

Industrial acoustics

 Minimise occupant and plant machinery vibration, as well as providing reports to assess the acoustic impact of the site.

Electro-acoustics

 Sound system design and technical specification.

Technical investigations

Identify sources of noise and vibration, while determining a solution that complements the building's function and architectural design. We work with clients to review processes and formalise management systems for their assets. We assess asset reliability in the context of managerial requirements and make key recommendations on safety and performance.

Our Asset Performance services include:

Plant upgrades and implementation

 Ensure appropriate systems are chosen and implemented in a way that is sustainable and maintainable.

Energy efficiency opportunities (EEO)

 Identify opportunities to improve the energy efficiency of a building.

Maintenance management and solutions

 Develop comprehensive and adaptable maintenance plans.

Strategic planning

Create a resilient strategic plan.

Technical due diligence reporting

 Understand the technical limitations and their impact on a structure.

System troubleshooting

 Identify problems, as well as develop a solution that suits the budgetary requirements, the impact on a structure, and the timeline of the client.



BUILDING
INFORMATION
MODELLING (BIM)

115 Batman St Melbourne

NDY's AV team is committed to fully understanding the business objectives and user requirements of each client, to ensure that the optimal solutions can be provided in the most practical, cost effective and efficient manner.

Our Audio Visual services include:

Brief Definition

 Audit of existing systems and assets, conducting business effect reports and preparation of project briefing requirements.

Planning & Options Analysis

 Strategic planning, conduct feasibility studies, options analysis and business case development.

Operation & Management

 Assist in the operation and management of infrastructure and technology systems.

Design and Documentation

 Design planning and management, preparation of policies, tender and contract documentation.

Procurement

 Vendor screening and pre-qualification, tendering and negotiation with vendors and preparation of vendor framework agreements.

Implementation and Contract Services

 Installation supervision, quality inspections and control and project management services. The true value of BIM is the ability to collect, share and leverage construction related information from project stakeholders. This results in greater speed, accuracy and efficiency at every stage of project delivery and streamlines the progression into the operational phase.

Our BIM services include:

BIM Execution Plan

 Develop a comprehensive and bespoke plan in consultation with key project stakeholders that aligns with project goals.

Modelling

Identify changes made to both geometry and data in a dynamic 3D environment.

Clash Detection

 Use sophisticated modelling techniques to address coordination in the early stages of design.

Data manipulation

 Extract data from models, manipulate the data and then inserting it into models for numerous applications.



Commissioning management is the process of ensuring that all systems and components of a building are designed, installed and maintained according to the design brief, and operational requirements of the owner.

Our Commissioning Management services are delivered through our ECS brand, and they include:

Reviewing contractor method documentation

 Provide expertise on the feasibility and compliance of the relevant documentation.

Creating commissioning plans and schedules

 Set up a reliable, realistic plans that provide efficient commissioning timelines.

Facilitating meetings and workshops

Keep stakeholders informed across the life cycle of the project.

Functional testing

 Ensure outcomes are in line with expectations and requirements.

Reviewing operational performance

 Evaluate the outcome performance and identifying opportunities for improvement.



Energy efficient buildings rely upon sophisticated technology to maintain their performance and value. This requires hi-tech diagnostics, tuning and maintenance to ensure that the building is operating at peak efficiency.

Our Controls & Integration services include:

Remote diagnostics

 Remote evaluation offering a convenient and efficient method of diagnostics.

Energy control strategies design

 Establish technological and operational methods for improving efficient use of energy.

Implementation and verification

> Ensure that the systems operate as designed, to the required standard.

Retro commissioning

 Design systems that can operate across multiple generations of technology.

Building tuning

 Fine-tuning of the parameters of the building's systems to ensure optimal operation.

Energy reporting

 Identify energy usage across designated areas, and highlighting opportunities for improvement.





Our Electrical services include:

Building design

 Creation of a design for electrical service that accounts for the energy needs and architectural design of the building.

Energy management

 Integrate the necessary control systems to ensure energy supply is kept at optimal levels of operation and efficiency.

Fault discrimination analysis

Provide detailed reports on faults, along with action plans to address the problem.

Emergency power generation systems

 Uninterrupted power solutions to provide emergency backup power as required.

Retail electricity procurement

Assist in sourcing the best energy provider for the needs of the client.

Due diligence

Thorough investigation of all electrical systems being implemented or modified.



Our specialist Fire Engineering team have extensive experience and understanding of all aspects of fire and life safety associated with new and existing buildings.

Our Fire Engineering services include:

Detailed Fire And Evacuation Modelling

 Predictive modelling of crowd movements in an emergency situation.

Rationalised Fire Ratings

 Determine current ratings of zones, and identify opportunities for improvement.

Smoke Hazard Management

 Design of smoke extraction systems, and safe storage of combustibles.

Fire Safety Audits And Risk Assessments

 Audit the current emergency strategies and highlight risk factors that can be improved.

Construction Phase Involvement

 Collaborate with key parties to ensure the design considers key fire engineering principles, such as speed of egress and safe combustible storage.



Fire protection is a crucial and highly specialised segment of building services engineering. We have the depth of experience to provide clients with effective strategies for the protection of life and assets.

Our Fire Protection services include:

Performance-based design

 Creates systems that provide the necessary fire suppression and safety features that suit the buildings operation and design.

Fire safety risk assessment

 Identify physical and procedural fire hazards.

Smoke spread computer modelling

 Computer simulations of smoke behaviour.

Building services inspection

 Whole building reports on fire protection elements.

Fire safety management plans

 Determine optimal strategies for maintaining and improving fire safety.



Water is a crucial consideration in building services. NDY's Plumbing experts work with clients and design teams to develop cost effective strategies for the provision of plumbing and drainage services.

Our Plumbing services include:

Waste water

 Efficient design of waste water removal with a focus on efficiency and sustainability.

Solar hot water systems

 Design of hot water systems that use solar power to lower operating costs, and improve environmental ratings.

Potable water systems

Provide efficient access to clean water.

System audit and maintenance programs

 Identify operational vulnerabilities, and maintenance strategies that minimise downtime.

Water treatment

Designs for water treatment systems, from Industrial to residential level.

Infrastructure design

 Large scale planning for water services across a project.





Our specialist ICT team look for opportunities to incorporate technology solutions that improve information sharing, collaboration and communication, while giving special consideration to preserving data security and integrity.

Our ICT services include:

Specific solutions

 Reliable communication solutions tailored to the specific needs of each client business.

Comprehensive documentation

 Knowledge necessary to train and operate the solutions being implemented.

Risk Assessment

- > Identify vulnerabilities in the system.
- Provide convenient access to authorised parties, while effectively hindering unauthorised access.

Technology Audits

 Identify opportunities for greater technological efficiency, automation or precision. NDY are office fitout specialists. We have proven experience in advising and guiding clients as they prepare to move into a new premises or modify a pre-existing location.

Our Interiors services include:

Benchmarking

 Assist prospective tenants to determine a building's suitability for their needs.

Offices

 Acoustic design for performance spaces including auditoria, theatres and cinemas.

Server Rooms

 Noise control for compliance with environmental protection policies.

Large Function Rooms

 Whole building vibration isolation to reduce structure-borne noise and vibration intrusion.

Mission Critical Data Centres

Sound and impact insulation testing for compliance with building code.





NDY is committed to providing our clients with master planning approaches that deliver outstanding results. Efficiency and sustainability are key considerations, while effective maintenance and monitoring of the built environment is also imperative.

Our Master Planning services include:

Sustainable strategy

 Work with the design and development teams to understand their project drivers, and communicate how the sustainability strategies we develop respond to these drivers.

Decentralised and off-grid services

 Future proof developments by providing mechanisms to integrate low carbon technologies.

HV and **LV** power

 Develop innovative equipment configurations, that provide high levels of reliability with minimum infrastructure.

Life cycle management

 Minimise cost and environmental impact, whilst providing maximum value for both our clients and the communities in which they operate. The NDY mechanical engineering team provides efficient designs for projects in all market sectors. Thorough research and documentation are evident in all projects, and all solutions are delivered reliably and cost effectively.

Our Mechanical services include:

Heating

 Provide comprehensive heating solutions that consider the operational costs, environmental requirements, and sustainability impact.

Ventilation

 Provide system designs that create the desired air flow in accordance with the requirements and purpose of the space.

Air conditioning

 Design efficient systems that create a comfortable space.

Energy efficiency

 Optimise energy-demanding plant machinery to operate more efficiently.





Our chartered Royal Institution of Chartered Surveyors (RICS) professional team have an excellent record of working with local and overseas property owners and occupiers. They provide a range of building consultancy services over the complete property life cycle, including acquisition and divestment.

Our Property Consultancy services include:

Acquisition

 Assist clients with procuring property assets that meet their stated criteria and investment objectives.

Asset management

 Implement systems that provide indepth analytics on the performance of buildings, with strategies that improve efficiency and operational stability.

Development

 Whole-of-life consultation services, ensuring that development goals are achievable and feasible.

Divestment

 Determine the most efficient strategy to divest a property in line with timing and investment objectives. Security is crucial for all businesses. Our expertise in developing detailed engineering plans for security controls and systems allows us to assist clients in ensuring that people, assets and information are kept safe at all times.

Our Security services include:

Cover planning and options analysis

 Provide security solutions that incorporate complete sensor coverage at points of vulnerability.

Security risk assessment

 Identify vulnerabilities and provide recommendations for resolution.

Engineering design and documentation

 Design a robust system, along with the documentation necessary to train operators in its use.

Procurement, implementation and contract services

 Incorporate the latest technology from reputable suppliers into the design, and source all appropriate materials.

Commissioning operation and management

Evaluate the system across the life cycle of the property.

Integrated security solutions

 Comprehensive assessment of physical and digital security solutions.





At NDY, we carefully and skilfully consider ways in which our communities and cities can become more sustainable through the appropriate management of our built environment.

Our Sustainability services include:

Strategic advisory

- Corporate strategy, governance and reporting
- › Pre-development advice
- Design briefing, verification and due diligence
- The NDY specialist sustainability group works across all major markets.

Project masterplanning

- > New sites development planning advice
- Urban re-development.

Sustainable design and Construction

- Construction review and contractor assistance
- Ecologically sustainable design strategies
- Sustainability benchmarking and certifications
- Simulation and compliance modelling

Sustainable operations

- Operational performance enhancement
- > Regulatory compliance and certifications
- Wellness management

For tall buildings to function effectively, a safe and fast vertical transportation system (more commonly known as elevators) is critical. Our service also extends to ensuring the provision of quality control services through the commissioning and installation of a project.

Our Vertical Transportation services include:

Systems Design and Selection

 Create a design that fits the operational and aesthetic requirements.

Documentation and Tendering

 Provide all necessary documentation to acquire, operate and maintain the specified system.

Construction Supervision

> Ensure the implementation is as designed, and on schedule.

Performance Based Maintenance Audits

Keep the maintenance plan relevant through the life cycle of the system.

Modernisation of existing equipment

Implement modern solutions within an existing building.

Condition and Pre-Purchase Audits and Reporting

Identify the needs and vulnerabilities of the system.



Civic

Our creation of a dedicated Civic market sector is recognition of the specific requirements for these type of built environment projects.

From arts precincts, theatre facilities and film studio projects, through to sport and entertainment venues, NDY takes a considered view of the client and end-user experience. Through this lens, we design services that ensure the highest level of operational efficiency, user experience, and return on investment over the entire asset life cycle.

Education

NDY has had many years experience with schools, universities and other education facilities. Our award winning ability to provide world class teaching facilities is widely recognised.

NDY has been actively involved in the Australian Federal Government's A\$14.7 billion Building Education Revolution.

Our experience in all building services disciplines (such as mechanical, electrical, communications, security and fire) are supplemented by our specialist expertise in ecologically sustainable design. Acoustics present specific challenges in education and our experts in this area have the necessary experience to meet all demands.

Health

Few market sectors require as much specialist knowledge as healthcare. NDY has an enviable record of providing services to major tertiary hospitals, healthcare & research facilities. We understand the connection between intuitive design, improved patient outcomes, sustainability and wellness.

With our strength in health ICT, we focus on solutions which help reduce infection rates, support chronic disease management and contribute to operational efficiencies in healthcare delivery.

Our focus is always on client-specific solutions which minimise whole-of-life project costs.



Industrial

NDY has extensive experience in the industrial sector, extending across manufacturing and food processing through to materials handling and infrastructure associated with the mining and resource industries.

With expertise involving technologies such as heavy power systems, controls, wide area networking, water treatment, acoustics and vibration advice, NDY can provide specialised solutions across a variety of complex industrial projects.

Our industry leading position on document delivery and 3D building information systems allows us to deliver added value to projects.

Mission Critical

NDY delivers visionary, integrated solutions to our mission critical clients. Secure, dependable facilities are vital for business continuity and our expertise in mission critical facility design is highly sought-after around the globe.

Our work in minimising data centre energy usage is recognised by leading global awards.

Across data centres, hosting or collocation, telecommunications infrastructure builds, call centres, satellite or cable landing stations, NDY's expertise assists our clients in minimising their risk and optimising their return on investment.

Offices

Commercial offices are the projects that have lined skylines across the globe since NDY commenced operations in 1959.

Commercial offices consume a significant amount of the worlds energy. Sustainable design and construction delivers far more than energy efficiency.

We work with our key clients to get the best out of their office buildings to maximise asset values, minimise operational costs, boost the health and productivity of people, demonstrate leadership in triple bottom line sustainability and reinforce their brand values.



Residential & Hotels

As populations grow and our cities expand, ensuring residential buildings and hotels combine efficiency with luxury is a valuable skill.

Our engineering services expertise for residential projects spans across affordable and social housing, through to high-end luxury apartments for low, medium and high rise developments.

Our Hotels experience is equally diverse with boutique luxury operators and projects including the Belgraves Hotel in London through to some of the world's most iconic hotels such as the Ritz Carlton in Dubai.

Retail

From retail tenancy design to major retail led mixed use complexes, we understand the unique requirements of the retail sector.

At NDY we keep abreast of issues and trends which impact the retail property sector. This understanding allows us to identify opportunities to improve our clients business, and manage key risks.

Digital strategy, customer centricity, diversity of experience, omni-channel sales and changing buyer habits, amongst a highly competitive and high turnover environment are key challenges our clients face. We aim to provide solutions that make the most of the opportunities that these challenges provide.

Transport

The NDY Transport group focuses on the four infrastructure spokes of rail, road, aviation and ports. NDY capabilities in aviation projects include core engineering services along with specialist services such as acoustics, fire and lighting.

Our ports expertise includes commercial marinas, ship building facilities, mining ports and freight logistic sites. The alliance with US rail firm LTK Rail to form NDYLTK Rail has enabled us to meet all rail engineering requirements.

NDY has proven expertise in the implementation of smart road networks through the planning intelligent traffic signalling, closed circuit camera monitoring and road lighting.







Engineering Commissioning Services (ECS) is an independent enterprise established by NDY Holdings, in recognition of the need for specialist commissioning management expertise.

Through our highly experienced and practical staff, ECS offers clients a unique depth of knowledge on global commissioning management projects, delivering buildings that perform as intended, that are maintainable, and operate in a sustainable manner.

As an independent commissioning consultant, ECS offers a holistic and unbiased assessment of services systems and their engineering components, to provide robust and reliable testing and commissioning outcomes. Improving a building's performance saves energy and reduces water consumption which significantly reduces operational costs.

www.engcommservices.com

NDYLIGHT

Architectural lighting is the bringing together of equal parts art and science; it is the blending of the two that sets it apart from the engineering disciplines, or from pure design.

The NDYLIGHT measure of success on any project is the attainment of visual delight and the complete fulfilment of all technical requirements.

We are independent lighting design consultants that build close professional relationships with our clients, design and construction teams so that we can work together ensuring that client's aspirations and requirements are met.

A Principal, allocated for each project, actively leads it from inception to completion. Extensively experienced teams of lighting designers with up-to-date technology and product knowledge are able to offer complex 3D computer modelling and analysis to suit the particular project needs.

www.ndylight.com

Our **Charitable Trust**

Throughout its history, NDY has been committed to giving back to the community.

This commitment to charitable causes inspired the establishment of the NDY Charitable Trust which provides financial and on-the-ground support to charities that align with our aim to assist communities in need.

For further information about the NDY Charitable Trust, visit:

www.ndycharitabletrust.org













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