SAN DIEGO: AUDIT & MANAGEMENT ADVISORY SERVICES
0919

July 7, 2023

RANDY LEOPOLD
Associate Vice Chancellor
Capital Program Management
0916

Subject: ***Construction Project Delivery Process***
Report 2022-01

The final report for Construction Project Delivery Process, Report 2022-01, is attached. We would like to thank all members of the department for their cooperation and assistance during the review.

We were able to reach agreement regarding management action plans in response to audit recommendations associated with findings C, E, and F. These management action plans are included in this report and will be added to our follow-up system. We will contact you at the appropriate time to evaluate the status of the management action plans.

Capital Program Management did not agree with audit recommendations for findings A, B, and D, and their response on these items is included in **Attachment B**. Additional comments that we have regarding Management's response is included in **Attachment C**.

UC wide policy requires that all draft reports be destroyed after the final report is issued. We also request that draft reports not be photocopied or otherwise redistributed.

Christa Perkins
Digitally signed by Christa Perkins
Date: 2023.07.07 11:13:29 -07'00'

Christa Perkins
Director
Audit & Management Advisory Services

Attachment

cc: Judy Bruner
Alexander Bustamante
Jeff Gattas
Linda Kermott
Pradeep Khosla
Pierre Ouillet
Cheryl Ross

UC San Diego

AUDIT & MANAGEMENT ADVISORY SERVICES

Construction Project Delivery Process
Report No. 2022-01
July 2023

FINAL REPORT

Performed By:

Andrew Podruski, Deloitte Senior Consultant
Heath Whitaker, Deloitte Manager
Matthew Wolfram, Deloitte Senior Manager
Michael Hostettler, Deloitte Managing Director
Greg Buchanan, Manager

Approved By:

Christa Perkins, Director

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I. EXECUTIVE SUMMARY

Audit & Management Advisory Services (AMAS) engaged Deloitte Risk and Financial Advisory (Deloitte)[1] to review construction planning and management processes, policies, and procedures. The objective of the review was to assess whether project planning and management processes in place or gaps in those processes result in inefficiencies that could lead to higher construction costs for UCSD.

Based on our review, we concluded that UCSD processes could be improved to better control construction costs and potentially reduce cost premiums across the program. In addition, we noted elements of project management that while not directly contributing to increased costs, could give the perception that costs are higher than they should be.

Capital Project Management (CPM) employs a knowledgeable and dedicated team who take pride in managing projects through the unique challenges of campus project delivery, such as coordinating construction schedules and site logistics while minimizing impacts to facility operations and UCSD's active student body. CPM's project managers are tasked with aggressive timelines according to clients' business requirements, which are often driven by academic year planning. While we were not able to obtain current data directly from other UC campuses around staffing and program values, UC benchmarking data provided by CPM from the first quarter of calendar year 2021 showed that UCSD's project managers oversee a heavier workload than project managers at other campuses. Specifically, UCSD has the highest ratio of annual capital spend per project manager of all UC, with each project manager overseeing approximately $7M. By comparison, UCLA has the second highest ratio, with each project manager overseeing approximately $5.8M. CPM's employees appear to be properly classified and compliant with requirements from UCSD's Conflict of Interest (COI) policies related to financial disclosures, code of conduct, and conflicts of interest.

In general, CPM effectively manages project documents to provide transparency and allow for oversight into decision making. Bid processes appear effective and awarded contracts are distributed across a broad GC pool based on value and frequency of awards. Apart from one sampled project that experienced schedule compression with an unexpected single bidder response, project planning and contracting strategies employed by CPM minimize the degree of change to the initial project scope and provide positive incentives for general contractors to deliver the project on time and within the budget.

Based on a simplified benchmarking exercise, and using a threshold of +/-20% variance to establish comparability, we concluded that construction costs appeared comparable to estimated costs derived from industry-standard cost estimating tools and benchmarking databases. While construction projects were generally within established budgets, schedule delays occurred on four out of the five sampled projects. Non-pandemic-related delays during construction were attributable to long-lead times and supply chain delays, and scope gaps.

There are opportunities to enhance processes around budget development, project change orders for infrastructure upgrades, preliminary cost estimating, risk management and contingency development to improve cost and schedule controls on projects. We noted additional opportunity for improvement in the areas of change management, data capture for key performance indicator (KPI) reporting, and communication with stakeholders. Audit recommendations or management action plans are summarized on the following page.

[1] As used in this document, "Deloitte Risk and Financial Advisory" means Deloitte & Touche LLP.

Management agreed to Management Action Plans to address audit findings for items C, E, and F as indicated below. Management did not agree with audit recommendations for findings A, B, and D, and their response on these items is included in **Attachment B**. Additional comments from AMAS on this response is included in **Attachment C**.

A. Budget Development and Management

1. Recommendation: Develop a consistent approach for estimating soft and hard costs so that estimates more closely align with final construction costs. Engage with leadership (VC and above) regarding consistencies and strategies for estimating soft and hard costs for their awareness and input.
2. Recommendation: Track costs against major budget categories to improve accountability for the department and project managers to deliver to budgets over hard costs and individual soft cost categories, and not just total cost.

B. Project Change Orders for Infrastructure Upgrades

1. Recommendation: Ensure that future substantial change orders comply with policy by confirming that any added scope is not distinct from the original project scope as bid, that PCO Justification forms are completed in accordance with UCOP policy, and that documentation is sufficient to justify why the change was not competitively bid. Added scope that is distinct from the original scope at bid should be competitively bid in accordance with policy.
2. Recommendation: If unforeseeable utility upgrades are required for projects already under way, attempt to conduct expedited bid processes. Consider developing a program-wide prequalification process for contractors (as opposed to project-by-project prequalification) and leverage a prequalified bench of capable providers to engage quickly with the market.

C. Preliminary Cost Estimating

1. Management Action Plan: CPM will improve the precision of ROM estimates by leveraging, when applicable, UCSD's repository of project cost data (updated with final project costs as opposed to budgeted costs) for projects with similar scopes and applying relevant market factors to reflect current conditions.
2. Management Action Plan: CPM will continue to educate project owners on the reliability of ROM figures and communicate how design and scope decisions through the project development and construction phases impact cost and schedule.
3. Management Action Plan: When possible, project managers who will manage construction will be assigned during the charter development phase and be responsible for the budget from the ROM estimate stage.

D. Risk Management and Contingency Development

1. Recommendation: Conduct and document more deliberate risk analysis exercises to support contingency development. This could include establishing a baseline set of risks common for projects across UCSD's program, or other historical or site-specific knowledge. Use the baseline risk set to initiate the risk exercise for projects during planning and add risks to the qualitative analysis that are specific to the circumstances for the project.
2. Recommendation: Perform a quantitative risk exercise wherein cost impacts and probabilities of occurrence for risks are estimated for projects above a cost threshold or for projects with risky characteristics (e.g., aggressive schedule, incomplete design, contaminated site). Use the result of the quantitative assessment to estimate contingency amounts. Update the risk exercise throughout the project.

E. Change Management

1. Management Action Plan: CPM will include a justification field on the Cost Proposal/Field Order (CPFO) form and will require project managers to document their justification that the described scope of work constitutes a change to base scope of work per the contract.
2. Management Action Plan: CPM will introduce a change order review checklist to assist project managers with their review of the buildup costs for change orders. When contracts are executed, CPM will populate relevant change order markups, fees, and labor rates, including for subcontractors, in the checklists as a reference for project managers during their reviews.
3. Management Action Plan: CPM will develop guidelines for the use of field orders when conditions in the field require mitigation, and consider establishing not-to-exceed amounts for field orders if the full scope of the issue is not initially determinable.

F. Project Controls, Key-Performance Indicators, Tracking & Reporting

1. Management Action Plan: CPM will evaluate KPIs at the program and project level and establish expectations around tracking and report standards to promote consistent and accurate tracking of meaningful metrics.
2. Management Action Plan: CPM will explore the use of e-Builder modules to capture potential change orders and enhance forecasting, and overall improved project reporting. CPM will train project managers on enhanced functionality and require project managers to regularly update e-Builder data.

Observations are described in greater detail in section V. of this report.

II. BACKGROUND

As part of the internal audit plan for fiscal year 2021-22, Audit & Management Advisory Services (AMAS) engaged Deloitte Risk and Financial Advisory (Deloitte)[2] to review construction planning and management processes, policies, and procedures, including the policies outlined in the University of California Office of the President (UCOP) Facilities Manual, to assess whether processes and delivery methods contribute to cost premiums for UCSD on construction projects. This report summarizes the results of the review.

III. AUDIT OBJECTIVE, SCOPE, AND PROCEDURES

On behalf of AMAS, we performed an internal audit of the CPM department with the specific objective of assessing whether project planning and management processes in place or gaps in those processes result in inefficiencies that could lead to higher construction costs for UCSD. The in-scope processes included:

- Budget and budget development
- Cost estimating
- Procurement
- Prime contract/general contractor (GC) agreements
- Contractor payment applications
- Project changes
- Project scheduling
- Project management tools

The scope included the following:

- Evaluating the effectiveness of the budget development process;
- Assessing whether initial project requirements are prescriptive/detailed enough to reduce project change orders;
- Evaluating UCSD project costs in comparison to other California-based public universities and identifying industry practices which can be applied at UCSD;
- Evaluating for potential operational efficiencies (organizational structure / project management oversight);
- Assessing whether the number of construction firms awarded contracts appears reasonable;
- Evaluate processes for mitigating potential conflicts of interest; and
- Assessing whether construction projects are generally delivered on-time and within established budgets.

The assessment approach included the following steps:

- Reviewing existing project management policies and procedures relevant for the scope and objectives;
- Conducting walkthroughs with CPM personnel and personnel from support functions for CPM to understand relevant processes, how processes were executed on projects or across the program, and context and backgrounds of certain projects to aid in selecting a project sample;
- Selecting a sample of five projects to understand how in-scope project-level processes were administered on each project;
- Assessing bid scoring across a sample of contemporaneous projects (seven additional projects beyond the five sample projects) and attempting to discern whether the same bidders were being

[2] As used in this document, "Deloitte Risk and Financial Advisory" means Deloitte & Touche LLP.

invited to bid and awarded bids across the project population and if there were any patterns which may suggest manipulation among the bid population; and

- Obtaining and reviewing documents supporting construction management processes described by stakeholders and by policies and procedures. Documents reviewed included:
  - Budgets
  - Bid documents
  - Contracts
  - Payment applications
  - Change order logs / change orders
  - Organizational charts
  - Schedules

We selected the project sample from a list of 48 completed projects between August 2019 to August 2021, provided by the CPM department. We applied the following quantitative and qualitative criteria to the full list of completed projects to obtain a representative sample. Initial analysis identified the top four Vice Chancellor (VC) areas according to the quantity and total cost of projects. We identified the typical projects by scope, type, and cost of the completed projects across each of the four VC areas. We applied additional selection criteria based on delivery method, project manager availability, and the availability of necessary project data and documentation. In addition to the five projects in the primary sample, we augmented the initial sample with a secondary sample to assess bidding and project awards. For this procedure, an additional seven projects were selected (NTP Living & Learning Neighborhood, TPCS 2nd Floor Renovation, MCH CP Steam Line Replacement, University Center Utility Relocation, Price Center West Multi-Tenant Building Retrofit, MCH MH S-25,42-43 HVAC Replacement, and The U).

The following five projects were selected for testing as noted below:

No.	Project Name	Project Information	Project Scope
1.	Nuevo West Graduate Student Housing	VC Area: **Chief Financial Officer** Delivery Method: **Design-Build** Project Type: **New Construction** Final Budget: **$178,292,000**Actual Cost: **$161,374,451** Actual Duration: **1,141 days** Completed: **2/18/2020**	Re-developed existing residential facilities to provide 800 new graduate student beds, arranged in two- and four-bedroom apartments in low and high-rise buildings. A shared parking facility was constructed, which added 1,244 spaces. Additionally, 15 two-bedroom apartments and 25 hotel-style rooms, a community kitchen, and laundry facilities were delivered to accommodate the patients' families while admitted at UCSD medical facilities.
2.	Lyman-Voigt-Matthews Utility Relocation	VC Area: **Resource Management & Planning** Delivery Method: **Bid-Build** Project Type: **Relocation** Final Budget: **$7,700,000** Actual Cost: **$7,631,584** Actual Duration: **1,108 days** Completed: **8/13/2021**	The project included the relocation of water and electrical lines from the existing Lyman Lane to the future light-rail development plaza area, prior to final plaza hardscape and installation. Additional scope was also included to replace the existing campus hydronic system.
3.	Medical Center Hillcrest Cooling Tower Refurbish	VC Area: **Health Sciences (Medical Center)** Delivery Method: **Bid-Build** Project Type: **Renovation** Final Budget: $**2,900,000**	Designed and performed a refurbishment of four existing cooling towers at UCSD's Hillcrest Medical Center.

No.	Project Name	Project Information	Project Scope
		Actual Cost: $**2,441,314** Actual Duration: **965 days** Completed: **4/21/2021**	
4.	BFS Three-Spined Stickleback Fish Facility	VC Area: **Executive Vice Chancellor** Delivery Method: **CM-at-Risk** Project Type: **New Construction** Final Budget: **$1,500,000** Actual Cost: **$1,239,810** Actual Duration: **401 days** Completed: **9/9/2020**	Prepared site and installed utilities for prefabricated facility. Electrical, water, and sewer utilities will extend from BFS to the site. Onsite assembly of prefabricated facility. The laboratory was pre-fitted with walls, HVAC system, electrical receptacles, data, lighting, and plumbing. A small food preparation and handling area, sink, and minor casework was also included.
5.	Outback Adventure Relocation	VC Area: **Executive Vice Chancellor** Delivery Method: **Design-Build** Project Type: **New Construction** Final Budget: **$2,996,000** Actual Cost: **$2,575,491** Actual Duration: **494 days** Completed: **8/19/2019**	Procured and installed a modular building for use by the Outback Adventure group. Project included exterior programmed space at the site, located at the lawn area south of the Spanos Training Center.

IV. CONCLUSION

Based on our review, we concluded that UCSD processes could be improved to better control construction costs and potentially reduce cost premiums across the program. In addition, we noted elements of project management that while not directly contributing to increased costs, could give the perception that costs are higher than they should be.

CPM employs a knowledgeable and dedicated team who take pride in managing projects through the unique challenges of campus project delivery, such as coordinating construction schedules and site logistics while minimizing impacts to facility operations and UCSD's active student body. CPM's project managers are tasked with aggressive timelines according to clients' business requirements, which are often driven by academic year planning. While we were not able to obtain current data directly from other UC campuses around staffing and program values, UC benchmarking data provided by CPM from the first quarter of calendar year 2021 showed that UCSD's project managers oversee a heavier workload than project managers at other campuses. Specifically, UCSD has the highest ratio of annual capital spend per project manager of all UC, with each project manager overseeing approximately $7M. By comparison, UCLA has the second highest ratio, with each project manager overseeing approximately $5.8M. CPM's employees appear to be properly classified and compliant with requirements from UCSD's Conflict of Interest (COI) policies related to financial disclosures, code of conduct, and conflicts of interest.

In general, CPM effectively manages project documents to provide transparency and allow for oversight into decision making. Bid processes appear effective and awarded contracts are distributed across a broad GC pool based on value and frequency of awards. Apart from one sampled project that experienced schedule compression with an unexpected single bidder response, project planning and contracting strategies employed by CPM minimize the degree of change to the initial project scope and provide positive incentives for general contractors to deliver the project on time and within the budget.

We were unable to obtain data from other UC campuses that could be utilized for benchmarking UCSD project costs against other campuses. However, based on a simplified benchmarking exercise, and using a threshold of +/-20% variance to establish comparability, we concluded that construction costs appeared comparable to estimated costs derived from industry-standard cost estimating tools and benchmarking databases. Specifically, the cost of Nuevo West Graduate Student Housing project is above the expected benchmark by 4%, deviation that is within the threshold defined to be reasonable. Similar benchmarking was applied to the BFS Three-Spined Stickleback Fish project, which employed a prefabricated modular construction approach. While direct comparison was difficult because benchmark data did not account for the construction methods employed on the project, the actual project cost was below the benchmark by 44%. Though the difference is outside the reasonable threshold, the result is expected because the prefabricated modular approach should reduce certain overhead, mobilization, material spoilage, and other costs that can be better managed or eliminated in a controlled fabrication process.

While construction projects were generally within established budgets, schedule delays occurred on four out of the five sampled projects. Delays primarily occurred during either the construction or post-construction (warranty) phases of work. Three out of five projects were substantially complete prior to pandemic-related impacts, however two projects were in progress during periods with enhanced safety precautions. Additional non-pandemic-related delays during construction were attributable to long-lead times and supply chain delays, and scope gaps.

There are opportunities to enhance processes around budget development, project change orders for infrastructure upgrades, bidding, change management, data capture, and risk management to improve cost and schedule controls on projects. Budgeting and estimating controls can be improved to align funding requests with actual project costs and promote accountability for contingency usage. Significant variances between ROM estimates and actual costs could result in stakeholder expectations, and subsequently-approved budgets include surplus amounts that may make project costs appear inflated. The combination of both issues may create the perception among CPM's stakeholders that project cost increases are excessive and that total project costs are unreasonable. Within the project sample, we also noted gaps in master planning around utilities, infrastructure, and site planning. In addition, processes for developing the contingency and risk management could be improved for a more proactive approach to managing project risks. Change management processes can also be enhanced to improve supporting documentation and review of the contractual compliance of change orders.

Design process controls are generally effective in limiting the degree of change in project scopes. However, we identified two cases where over 25% of the GC's final contract sum amounted to scope added as change orders. These costs represent costs that were not subject to competitive bids and may represent cost premiums paid by CPM for underdeveloped scopes.

CPM uses e-Builder to track costs. However, limitations in data accuracy and completeness reduce the value of forecasting and key performance indicator (KPI) reporting out of e-Builder. Enhanced tool capabilities around change and risk management could improve forecasting, budget transparency, and stakeholder management. Further, stakeholder management could also be enhanced with standardized reporting in terms of content and cadence.

Further information on our observations is provided in the balance of this report.

V. OBSERVATIONS REQUIRING MANAGEMENT ACTION

A.	Budget Development and Management
Conservative estimates for four sampled projects led to budget surpluses and augmented contingency; controls are limited for spend oversight within total approved budget.	
Risk Statement/Effect	
Budgets that are higher than necessary to avoid requesting multiple rounds of funding could result in project managers being less scrutinous of costs incurred, especially if total costs remain under approved budget amounts. Cost controls could be relaxed, reallocations of budgets could occur, and total project costs could increase as a result.	
Recommendations	
A.1	Develop a consistent approach for estimating soft and hard costs so that estimates more closely align with final construction costs. Engage with leadership (VC and above) regarding consistencies and strategies for estimating soft and hard costs for their awareness and input.
A.2	Track costs against major budget categories to improve accountability for the department and project managers to deliver to budgets over hard costs and individual soft cost categories, and not just total cost.

A. Budget Development and Management – Detailed Discussion

Project budgets are developed for approval by the Regents, President, or appropriate delegated authority using the Capital Improvement Program Budget (CIB) and corresponding CIB workbook tool.[3] Project budgets are broken into hard costs and soft costs. Third parties typically assist with estimates for hard costs while project managers largely use internal estimates for soft costs. Hard cost categories in the CIB include Site Clearance, Building Construction, Exterior Utilities, and Site Development. Except Site Clearance, these costs are referred to as the construction costs, or those typically covered under the scope of work completed by the GC. Soft cost categories are broken out into Campus Administration recharge, Architecture and Engineering (A&E) Fees, Surveys/Tests/Plans & Specifications, and Special Items. Campus administration costs are those associated with CPM's internal overhead and inspectors; A&E fees includes the budget for the architect and design consultants; Surveys/Tests/Plans and Specifications includes specific surveying and testing services; and additional costs for non-standard consulting services and miscellaneous project costs items that may be required during the project are budgeted under the Special Items category.

After the approval of the project budget by the Regents or VC area representative (Client), CPM's project managers are responsible for managing the budget until completion. Approvals from the Client for campus-funded projects are not required when reallocating surplus funds from one category or line item to the contingency, or to other project costs as they arise. Flexibility in managing the project budget allows project managers to reallocate funds to address unanticipated project costs or services, and to avoid seeking a budget increase for minor cost overruns within budget areas. However, capability for both the

[3] DA2629 Delegation of Authority – Capital Project Matters (https://policy.ucop.edu/_files/da/da2629.pdf)

project manager and CPM director to monitor project cost categories which are trending to exceed the approved budget is diminished by limited trend analyses or KPI tracking within e-Builder.[4]

According to the CIBs and cost summaries provided, a similar pattern of overbudgeting on construction costs was observed on four out of five projects of the sample. **After accounting for the difference between the total construction budget and the initial contract value, the initial approved budgets of those four projects included construction costs that were 39% (or $854,119) higher on average than third-party construction estimates, and 17% higher than the initial construction contract value *(Attachment A, Table 1*).[5,6]** At the time the notices to proceed for construction were issued, the construction budgets included an average surplus of $378,730 relative to the awarded contract sums. The surplus funds were not committed to costs associated with the construction contract values, planned additions to the scope or unbid work, or potential unforeseen changes which are covered by the contingency budget.

Based on the actual costs in cost summaries, it appears that CPM overbudgeted some soft costs, specifically those allocated to Special Items. Three out of five projects included surplus funds in the budget for Special Items. For those three projects, an average of 29% (or $4,981,247) of the Special Items budget was utilized *(Attachment A, Table 2)*. A notable case was on the Nuevo West Graduate Student Housing project where the Special Items budget included $16.65 million in costs, including a single line-item cost of $14.51 million for "Interest During Construction." We understand that the "Interest During Construction" line item was added to the budget by Capital Planning, and that those costs were not actually incurred during construction. In addition, according to the cost summary for that project, only 11% or $1.85 million of the Special Items budget was spent.

Project managers indicated that surplus balances from line items or cost categories that are not exhausted during the project are reallocated to the project contingency budget, and remaining funds are typically not returned to the client until the end of the project, during the project close-out process. In general, the availability of excess funding may lead to reduced attention to project controls, including scrutiny over change orders and other costs if total budget remains under the approved funding.

Referring to the four projects with surplus funds in the construction budget, the actual soft costs at the conclusion of the project exceeded their initial budgets by an average of 32% (or $151,695). Notably, Campus Administration recharge rates for the four projects exceeded the initial budget by an average of 94% (or $101,502), and A&E Fees for three out of four were over budget by an average of 26% (or $71,584) (*Attachment A, Tables 3-5*). **After accounting for budget augmentations and remaining balances in soft cost budget areas, the four projects show soft cost overruns ranging from $23,713 to $165,740, and three of the four projects may not have had funding remaining in the contingency to cover the outstanding deficits.**

We requested the amount of construction contingency spent by project; however, documentation could not be provided by CPM for the actual amounts spent. As a result, it is not possible to determine the exact amount of contingency that was spent or whether it was reallocated to deficits across budget areas.

[4]See observation "E" for additional details related to CPM's KPI tracking and trend analysis in the e-Builder tool.
[5]In cases where budget augmentation was required, the first approved project budget was used as the basis of the analysis.
[6]To accurately reflect the surplus amount with respect to the total known project scope, a change order (CO#2) for $413,755 on Outback Adventure for site work scope was considered as part of the initial construction contract value.

B.	Project Change Orders for Infrastructure Upgrades
Planning decisions led to added scopes that were not subject to competitive bidding and that, in two cases, were inappropriately processed as substantial change orders. On one additional sampled project, added scope negatively impacted the project schedule.	
Risk Statement/Effect	
When scopes required for projects to meet their design and functional intents are excluded from the design documents, there is potential for project costs to increase as missed scopes are priced noncompetitively as change orders, and could result in scope changes being processed in a way that does not comply with policy. Project schedules could also be impacted by delays due to additional scoping and pricing, or when such activities are accelerated to maintain schedule, again leading to cost premiums.	
Recommendations	
B.1	Ensure that future substantial change orders comply with policy by confirming that any added scope is not distinct from the original project scope as bid, that PCO Justification forms are completed in accordance with UCOP policy, and that documentation is sufficient to justify why the change was not competitively bid. Added scope that is distinct from the original scope at bid should be competitively bid in accordance with policy.
B.2	If unforeseeable utility upgrades are required for projects already under way, attempt to conduct expedited bid processes. Consider developing a program-wide prequalification process for contractors (as opposed to project-by-project prequalification) and leverage a prequalified bench of capable providers to engage quickly with the market.

B. Project Change Orders for Infrastructure Upgrades – Detailed Discussion

UCSD's 2018 Long Range Development Plan (LRDP) sections 2.8.9 and 3.6.7 outline strategic planning and development objectives for owned and operated utilities and infrastructure. Specifically, the document, which is developed and maintained by UCSD Capital Planning, provides that the campus "regularly evaluates and upgrades the utility infrastructure and distribution system,"[7] and that "projected utility demands have been analyzed to ensure the growth contemplated under the 2018 LRDP can be adequately supported and to identify new infrastructure needs."[8] Additionally, the 2018 Utility Infrastructure Goals in the LRDP include: 1) ensuring capacity and demand is regularly monitored and expanded to meet the needs of planned campus expansions, 2) coordinating infrastructure projects with future planned development, and 3) considering the life cycle costs, including replacement and maintenance.

On two sampled projects, we noted departures from the LRDP guidance in that campus infrastructure upgrades were initiated as project change orders (PCO) under a major capital project, or fast-tracked through planning, budget approval, and design processes. Additionally, there were two cases identified, including one on a third sampled project, where a substantial PCO (change order greater than $100,000) was submitted for changes in the project scope. Substantial PCOs are subject to additional requirements and the completion of a PCO Justification form in accordance with UCOP policy; however the scopes of the

[7] 2018 UCSD Long Range Development Plan, Section 2.8.9.
[8] 2018 UCSD Long Range Development Plan, Section 3.6.7.

changes in the two cases identified did not comply with the requirements for being awarded as substantial change orders. [9]

On the Nuevo West Graduate Student Housing project, expansion of the campus power grid was included in the project through PCOs, which were issued at the beginning of the construction phase. The scope of work was added to provide equipment, engineering, and labor to complete upgrades to the campus electrical grid. **The costs associated with the infrastructure development were valued at approximately $1.6 million, which constitutes a substantial PCO.** The costs associated with the campus power grid development were later refunded to the housing group by the campus group. The project manager explained the late decision made on the campus power upgrades and schedule pressures for opening the housing project resulted in the decision to include the power upgrades in the project and to work out funding across the groups. The need for reliable power was also a factor in this decision, as campus power has historically been more consistent than SDG&E.

On the Lyman-Voigt-Matthews Utility Relocation project, scope to design and replace the campus hydronic system was added to the project after the design phase of the base relocation scope was complete. The additional scope was initiated in response to late design changes from a direct exchange cooling system to a chilled water/air handling unit to service the new Design Innovation Building, as well as the future plan to expand Canyonview Recreation Center and potential requirement for the new housing development at Pepper Canyon. **The new scope was not accurately estimated and went to bid as a fixed price contract based on design-development-level documents; despite the incomplete and uncertain nature of the scope, the scope was bid on a lump sum basis and bid-build delivery, compensation and delivery methods commonly associated with completed designs.** As a result, multiple PCOs (approximately $1.65 million) and two budget increases were required to fund the gaps in scope. The change orders also negatively impacted the project schedule.

On a third project, Outback Adventure Relocation, UCSD Space Management and Planning did not coordinate with planning for the project. To meet the Client's timeline, Capital Planning proceeded without the identification of a site, which resulted in changes to CPM's contracting strategy while the project was in process. The original GC agreement covered the building construction, and CPM intended to contract the sitework scope separately; however, the sitework was later added as a substantial PCO to the building construction contract meaning that the sitework scope was not subject to a competitive bid. The PCO was valued at $413,755, of which 46% of the base costs proposed were to be self-performed by the GC and subject to a 15% contractor fee markup.

The planning gaps for the Lyman-Voigt-Matthews and Outback Adventure Relocation projects resulted in change order amounts that exceeded 25% of the base contract values in each case. Thus, a sizeable amount of the scope of work for each project was awarded non-competitively, including through substantial PCOs.

One criterion in justifying the award of work through a substantial PCO is to demonstrate that the new scope is related to the scope of work as bid. Specifically, one of the questions/guidelines on the PCO Justification Form states "Are the controlling elements of the proposed scope change incidental to the existing work? If they involve significantly different functions, programmatic features, or additions to the as-bid design, a change order is not appropriate." **In the cases of Nuevo West Graduate Student Housing and Outback Adventure Relocation projects mentioned above, the added scope was distinct from the project scope as bid, and therefore was not related or incidental to the initial project scope. While a**

[9] Facilities Manual Volume 5, Chapter 13, Section 13.2.7.

substantial PCO form was completed by the CMP project managers for these projects, the decision to award the campus power grid and site work scopes respectively as substantial PCOs is expressly "not appropriate" according to the policies outlined in the UCOP Facilities Manual and indicated on the PCO Justification form. Furthermore, in the case of Nuevo West Graduate Student housing project, the approximate PCO value of $1.6 million for campus power grid development exceeds the $650,000 competitive bidding requirement.

During our review, CPM disagreed that the changes above were distinct in scope from the project scope at bid and that a substantial PCO form was required. Per CPM Management, because UCSD operates on a quarter system (Fall, Winter, Spring, and Summer), objectives for certain projects may place the value of time at greater importance than cost, and UCSD may choose to accept the risk of bidding less than complete documents to meet the overall objective of finishing on time. CPM also indicated that there are schedule benefits to using the current general contractor who is already on-site rather than re-bidding and selecting a different GC. However, schedule pressures can lead to decisions which diminish the impacts of master planning and contracting strategies. To be able to run bid processes more quickly, CPM should consider enhancing its existing project-level prequalification process to employ a program-level prequalification for general contractors. Doing so would allow CPM to draw from a bench of contractors to execute competitive bidding processes more efficiently.

C.	Preliminary Cost Estimating
For the sample of non-health projects, rough-order-of-magnitude (ROM) project cost estimates in project charters were 42% lower than actual costs. Reducing the variance between initial ROM estimates seen by clients and actual costs can help better manage stakeholder expectations.	
Risk Statement/Effect	
Significant variances between ROM estimates and actual costs could result in stakeholder expectations not being met because budget and schedule refinements could result in descoping, cost increases, and schedule delays. Project managers could be put in difficult positions to recalibrate stakeholder expectations that were based on unrealistic estimates.	
Management Action Plans	
C.1	CPM will improve the precision of ROM estimates by leveraging, when applicable, UCSD's repository of project cost data (updated with final project costs as opposed to budgeted costs) for projects with similar scopes and applying relevant market factors to reflect current conditions.
C.2	CPM will continue to educate project owners on the reliability of ROM figures and communicate how design and scope decisions through the project development and construction phases impact cost and schedule.
C.3	When possible, project managers who will manage construction will be assigned during the charter development phase and be responsible for the budget from the ROM estimate stage.

C. Preliminary Cost Estimating – Detailed Discussion

Project charters are used to describe projects and obtain agreement on scope and ROM budget, and authorization from the Client to commence with further planning and approvals. The document is intended to serve as a rudimentary decision-making tool, allowing the project owner to calibrate the business case and approve the release of additional seed funding. The ROM cost estimate and preliminary schedule are important components of the charter.

Project charters typically are developed at the very early conceptual phase of the project. CPM provides ROM estimates based on early designs and an initial scope. We noted that cost refinements during the design development and construction document phase are common and lead to higher costs than the ROM estimate. **For three non-health projects in our sample (i.e., campus and utility projects), the final project costs were on average 42% higher than the ROM estimate**, though the highest end of the range was for the Stickleback Fish Facility project, which was a pre-fabrication modular construction project, a unique approach for CPM and for lab facilities that was difficult to estimate even with the assistance of a third party and the Facilities Management (FM) group. This approach was at the request of the Client based on attendance at a conference. However, the high variance rate between the ROM budgets and the final project costs does suggest there is room for improvement in the estimating process.

The ROM estimates are the first project costs Clients see. Unsophisticated Clients may not understand the evolution of cost from the ROM estimate to the final project cost and may be surprised costs increase as they do on non-health projects. CPM should continue to educate project owners on the reliability of ROM figures and communicate how design and scope decisions through the project development and construction phases impact cost and schedule. Concurrently, CPM should improve the precision of ROM estimates by leveraging, when applicable, its repository of project cost data (updated with final project costs as opposed to budgeted costs) for projects with similar scopes and applying relevant market factors to reflect current conditions.

Historically, the responsibility for developing project charters was assigned to a dedicated CPM resource. **The process has evolved in recent years so that a project manager is now typically assigned at the initiation of the charter to be engaged in the development process. However, the project managers assigned to projects in the sample were not typically involved in the charter process for those projects.** The primary reason for this appears to be the fact that the Design and Development Services (DDS), which has responsibility for charter development, was temporarily restructured into a separate administrative unit from CPM, which has since changed. One project manager who was not involved in drafting the charter reported that he felt he was given a task which was not achievable when speaking about delivering to a ROM estimate budget. Changes to the project manager between ROM estimate development and construction do occasionally occur due to attrition and reassignment, which makes it more difficult for project managers to effectively educate project owners on changes to the budget over the course of the project. When possible, project managers who will manage construction should be assigned during the charter development phase and be responsible for the budget from the ROM estimate stage.

D.	Risk Management and Contingency Development
Contingency amounts for sampled projects were not connected to actual risks and potential impacts on projects, or otherwise derived from empirical data relevant for the project scope or market conditions in which the project is delivered.	
Risk Statement/Effect	
Project contingency may be miscalculated. In some cases, the budget may not include enough contingency to cover realized risks and projects could be delayed while further funding is approved. In other instances, the excess contingency may lead to relaxed project controls and the appearance that costs are higher than they should be.	
Recommendations	
D.1	Conduct and document more deliberate risk analysis exercises to support contingency development. This could include establishing a baseline set of risks common for projects across UCSD's program, or other historical or site-specific knowledge. Use the baseline risk set to initiate the risk exercise for projects during planning and add risks to the qualitative analysis that are specific to the circumstances for the project.
D.2	Perform a quantitative risk exercise wherein cost impacts and probabilities of occurrence for risks are estimated for projects above a cost threshold or for projects with risky characteristics (e.g., aggressive schedule, incomplete design, contaminated site). Use the result of the quantitative assessment to estimate contingency amounts. Update the risk exercise throughout the project.

D. Risk Management and Contingency Development – Detailed Discussion

CPM's risk identification and management process is largely driven by GCs. Thus, for the sampled projects it appeared that risks were not documented until budgets were approved and a GC was selected. Risks were tracked within OAC meeting minutes and change order logs, indicative of a reactive approach to risk management as change orders typically account for risks that are actively impacting project schedule and budget. Change order logs did not include mitigation measures and action owners for risk mitigation steps as would typically be included in risk registers.

CPM project managers estimate contingency at the design development phase of projects. Project managers indicated that contingency estimates to cover risk from unknown and unforeseen conditions are based on specific site/facility knowledge, potential utility issues, market factors, their own knowledge and experience, and available data. However, we observed contingency budgets across four out of five sampled projects that were based on round percentages of construction cost or round lumps sum amounts. The approach to contingency estimating does not appear to be closely align project risks identified through a risk exercise.

CPM should consider conducting a risk exercise during project planning to identify known-unknowns and unknown-unknowns for projects based on scope, site conditions, facility history, market factors, timelines, and the Client involved. Some of these factors may be known to CPM based on experience, or site-specific factors which may not be apparent without a more deliberate documented risk analysis. CPM can use the initial set of risks to assess whether the project risk profile is higher, lower, or average for projects across

the program and use that result to establish a baseline contingency amount. The contingency should be derived from the results of past projects with similar profiles. CPM should iterate on the risk assessment as design progresses and seek the input of architects, cost consultants, and GCs as they come aboard projects to update the risk register, quantify cost impacts and likelihood of risks occurring to estimate the necessary contingency, and assess whether the contingency budget will cover potential risks.

UCSD's capital program includes a wide range of project types ranging from modular research facilities, to health care projects, to high-rise dormitories. Correspondingly, project costs can range from less than $100,000 to over $500 million. It may not be reasonable to perform a quantitative risk assessment for every project, especially if project scope is common within the UCSD capital program. For projects below a defined cost threshold, a program-level risk assessment can be helpful to estimate reasonable contingency amounts. The cost data from completed projects in UCSD's program along with considerations of current market conditions (e.g., inflation impacts, availability of qualified bidders) can be used to develop defensible contingency percentages to apply during budgeting depending on project scope and estimate cost. For larger projects or projects with unique scopes, contingency budgets tied to quantitative risk assessments should be used.

CPM did provide analysis for two additional projects outside of the sample that demonstrated that a thorough risk analysis is completed on some projects, but based on our review of sampled projects, that level of risk analysis is not completed on all projects.

E.	**Change Management**
Change management controls are not operating consistently as there are gaps in policy compliance, documenting entitlement, and contractual compliance of costs and fees in change orders across the project sample.	
Risk Statement/Effect	
Cost overruns may occur due to unapproved, unentitled, or noncompliant costs. The risk of delays and disputes increases. While relatively low within the sample, change order cost overruns of $15,040 were noted.	
Management Action Plans	
E.1	CPM will include a justification field on the Cost Proposal/Field Order (CPFO) form and will require project managers to document their justification that the described scope of work constitutes a change to base scope of work per the contract.
E.2	CPM will introduce a change order review checklist to assist project managers with their review of the buildup costs for change orders. When contracts are executed, CPM will populate relevant change order markups, fees, and labor rates, including for subcontractors, in the checklists as a reference for project managers during their reviews.
E.3	CPM will develop guidelines for the use of field orders when conditions in the field require mitigation, and consider establishing not-to-exceed amounts for field orders if the full scope of the issue is not initially determinable.

E. Change Management – Detailed Discussion

CPM's change management processes are defined by the UCOP Facilities Manual *(Volume 5, Chapter 13: Contract Modifications).* UCOP's standard construction contract templates include Articles 4 and 7 of the General Conditions, which establish the contractual terms and conditions pertaining to change management. There were no Supplemental Conditions providing exemption to the General Conditions section of the contract for any of the projects or change orders reviewed as part of our sample. Additionally, there were no change-order specific exemptions to Article 7.3 indicated for the sample of change orders reviewed.

Our assessment of CPM's controls was based on a sample of one approved PCO for each of the five sample projects. If the PCO contained multiple underlying CPFOs, we reviewed each underlying CPFO individually for the required documentation and compliance with the policies and procedures as stipulated by the UCOP Facilities Manual and the contract. **The testing concluded that change orders did not consistently include clear documentation supporting the changes, including backups for costs of the work or evidence of the compliance of costs with UCOP policies and contractual obligations governing project changes.**

From the sample of approved PCOs, the underlying CPFOs did not consistently include detailed descriptions of the work to assess or review the contractor's entitlement to the approved changes. The PCO approvals process flow is conducted within the e-Builder tool. The first approval stage is the responsibility of the project manager, who validates the entitlement, scope, cost, and schedule impact of the cost proposal. After the project manager reviews a cost proposal, it is then grouped with other reviewed proposals underneath a PCO. Subsequently, signoff from the Finance group and a formal approval by the appropriate delegated authority is provided based on the project manager's review and approval of the scope, costs, and entitlement. While there were no cases of approvals being provided for scope that was covered under the contractual scope of work, our observation of PCOs with non-allowable costs and fees (see below) indicates that these errors in the project manager review processes were not caught by the senior director or VC when approving PCOs.

We noted change order costs charged to projects that were not allowable per Article 7.3.3 of the General Conditions. Two projects included costs for superintendents; office expenses including staff, materials, and supplies; and small tools. For two other projects, the allowable 15% fee for work performed by the prime contractor was incorrectly applied by the prime contractor to subcontractor performed work. The total amounts of overbilling identified in connection with the sample of change orders is provided below:

Project	Non-Allowable Costs	GC Fee % Clawback	Total
MCH Cooling Tower Renovation	$10,272	$4,570	$14,941
Outback Adventure Relocation	$99	$0	$99
Total	**$10,371**	**$4,570**	**$15,040**

Population	Amount	% of Sample
Total Change Orders in Project Sample	$11,609,097	-
Change Order Sample	$1,057,258	9%
Non-Compliant Costs	$15,040	1.4%

Article 4.2.2 of the General Conditions establishes that precedent to obtaining an adjustment of the contract sum or contract time, timely submission of a change order request by the contractor is required

upon direction by CPM to perform additional work. Article 4.2.3 further defines that a change order request will be deemed timely if, and only if, it is submitted within seven days of the time the contractor discovers the circumstances giving rise to the change order request.

In one case, a condition requiring remediation was discovered in the field and noted in the OAC meeting minutes. The project manager did not officially issue a field order to direct the contractor to proceed immediately with additional work. However, a cost proposal was submitted retrospectively for work which was completed approximately 45 days prior. Back-ups included with the cost proposal are not consistent with the required documentation for work performed under a field order according to Articles 7.3.4, 7.3.5, and 7.3.6 of the General Conditions. Specifically, the cost proposal includes costs for labor which was not supported by timecards, and materials and services which did not have invoices for actual costs incurred. Additionally, costs for an excavation contractor were included in the cost proposal, supported by an invoice that indicates the vendor provided dirt removal services associated with both in-scope and cost proposal scopes on the same day. The approval of the cost proposal, given the contractor's untimely submission and failure to provide supporting cost backups, potentially allowed costs for work conducted on contractual scope to be billed as additional costs incurred underneath the PCO.

F.	Project Controls, Key Performance Indicators, Tracking and Reporting
The utility of the e-Builder cost management system for reporting on budget status and forecasting, particularly at the program level, is limited as CPM project managers historically have not consistently populated project information in the system and there is minimal tracking of key performance metrics and trends.	
Risk Statement/Effect	
Salient project metrics and KPIs such as cost and financial metrics, schedule status, percentage of completion, risks, and safety are not reported to relevant stakeholders accurately or in a timely manner. Leadership makes program and project decisions on incomplete or inaccurate information. Costs may be trending higher than what they appear to be in reports.	
Management Action Plans	
F.1	CPM will evaluate KPIs at the program and project level and establish expectations around tracking and report standards to promote consistent and accurate tracking of meaningful metrics.
F.2	CPM will explore the use of e-Builder modules to capture potential change orders and enhance forecasting, and overall improved project reporting. CPM will train project managers on enhanced functionality and require project managers to regularly update e-Builder data.

F. Project Controls, KPI, Tracking and Reporting – Detailed Discussion

CPM noted that the utility of e-Builder for project controls, budget reporting, and tracking performance metrics and trends has been constrained by the accuracy and reliability of user input project data. Recent efforts by CPM to maintain accurate and up-to-date project data have improved tool utilization by project managers. However, current tool deficiencies for managing change, risk tracking, and analyzing tends are continuing to limit budget transparency and forecasting, and the reliability of reporting from the tool. The

downstream impacts of deficiencies at the project level reduces the value of the tool from a program governance perspective.

Multiple project managers report gaps in e-Builder's current functionality for managing change; the project managers indicated that the tool's cost management module does not allow for the input and accurate tracking of potential costs arising from risks until those costs are finalized and committed through an approved change order. The lag between the issuance of a field order or cost proposal and the approval of a change order results in risks or potential costs not being reflected in the budget status or forecasts in the tool. Project managers maintain external change order logs to track such potential risks, which then must be reconciled with the e-Builder data to obtain an accurate forecast. The output of this process does not migrate back to the e-Builder dashboard and is subject to input errors. Additionally, when used for the purpose of monthly reporting to the client, the dashboard alone does not render a complete picture of the project status, trends, or the potential impact of risks.

According to a CPM Senior Director, the KPIs being tracked within the dashboard are minimal. The dashboard has a red, yellow, green light to indicate whether the schedule and budget is adhering to plan; however the dashboard is limited in facilitating trend analyses. Live project dashboards were not available for project in the sample as they were complete. However, we reviewed two additional e-Builder snapshots for active projects and noted limited KPI tracking.

Table 1 - Comparison between Estimated Costs, Approved Budget and Initial Contract Value

Project	Average Estimated Construction Costs	Approved Project Budget (excluding Site Clearance)	Approved Project Budget over Average Estimated Construction Costs	Initial Contract Value	Budget excess over Initial Contract Value	% variance between Estimated Costs and Approved Budget	% variance between Estimated Costs and Approved Budget
5235 Lyman-Voigt-Matthews Utility Relocation	$2,714,484.00	$5,059,000.00	$2,344,516.00	$4,432,000.00	$627,000.00	86%	14%
5228 MCH Cooling Tower Refurbish	$1,540,413.00	$2,123,000.00	$582,587.00	$1,676,295.00	$446,705.00	38%	27%
5333 Three-Spined Stickleback Fish Facility	$853,949.00	$921,000.00	$67,051.00	$887,280.00	$33,720.00	8%	4%
5262 Outback Adventure Relocation	$1,769,678.00	$2,192,000.00	$422,322.00	$1,784,505.00	$407,495.00	24%	23%
Average			**$854,119.00**		**$378,730.00**	**39%**	**17%**

Table 2 - Special Item Utilization

Project	Budget	Actual	Budget vs. Actual	% Special Items Utilized
5053 Nuevo West Graduate Student Housing	$16,657,000.00	$1,855,496.32	$14,801,503.68	11%
5228 MCH Cooling Tower Refurbish	$173,000.00	$55,430.67	$117,569.33	32%
5262 Outback Adventure Relocation	$45,000.00	$20,332.60	$24,667.40	45%
Average			**$4,981,246.80**	**29%**

Table 3 - Soft Costs

Project	Soft Cost Budget vs Actual			
	Soft Cost Budget	Soft Cost Actual	Actual over Budget	Budget Overrun / Budget
5235 Lyman-Voigt-Matthews Utility Relocation	$691,000.00	$1,106,740.95	$415,740.95	60%
5228 MCH Cooling Tower Refurbish	$455,000.00	$478,713.38	$23,713.38	5%
5333 Three-Spined Stickleback Fish Facility	$207,000.00	$294,063.45	$87,063.45	42%
5262 Outback Adventure Relocation	$414,000.00	$494,262.84	$80,262.84	19%
Average			**$151,695.16**	**32%**

Table 4 - Admin Recharge

Project	Admin Budget vs Actual			
	Admin Budget	Admin Actual	Actual Over Budget	Budget Overrun vs. Budget
5235 Lyman-Voigt-Matthews Utility Relocation	$200,000.00	$387,856.25	$187,856.25	94%
5228 MCH Cooling Tower Refurbish	$100,000.00	$187,657.50	$87,657.50	88%
5333 Three-Spined Stickleback Fish Facility	$42,000.00	$99,309.00	$57,309.00	136%
5262 Outback Adventure Relocation	$126,500.00	$199,686.25	$73,186.25	58%
Average			**$101,502.25**	**94%**

Table 5 - A&E Fees

Project	A&E Budget vs Actual			
	A&E Budget	A&E Actual	Actual Over Budget	Budget Overrun vs. Budget
5235 Lyman-Voigt-Matthews Utility Relocation	$435,000.00	$609,883.30	$174,883.30	40%
5228 MCH Cooling Tower Refurbish	$155,000.00	$233,197.34	$78,197.34	50%
5333 Three-Spined Stickleback Fish Facility	$107,000.00	$104,824.34	-$2,175.66	-2%
5262 Outback Adventure Relocation	$221,500.00	$256,929.70	$35,429.70	16%
Average			**$71,583.67**	**26%**

February 3, 2023
July 6, 2023 (Updated Dates)

Christa Perkins
Director
Audit & Management Advisory Services

Subject: AMAS Report No 2022-01, Construction Project Delivery Process

Dear Christa,

Thank you for the opportunity to respond directly to the draft report on the Construction Project Delivery Process, Report No 2022-01 dated January, 2023. Over the last 16 months, Capital Project Management (CPM) Senior Directors and I met frequently to discuss all aspects of this report, often with AMAS staff, paying particular attention to the details outlined by the outside auditor with regards to their understanding of our processes and procedures. Unfortunately, there were times that requested revisions to the document to ensure it accurately captured our procedures were not addressed. In general, it is not the recommendations that we have taken exception to but, rather, the accuracy of the base Risk Statement/Effect. For example: The "Risk Statement/Effect" that budgets are “overly conservative” fails to recognize efforts that every project has its own specific set of objectives and sensitivities – both of which are factored into CPMs strategy when developing project budgets. Additionally, it did not appear that there was any appetite to understand the complex relationship with the Regents (with respect to project budgets) that existed in the timeframe of the selected projects.

Also of note, there appeared to be a general reluctance within the audit findings to incorporate any acknowledgement that projects within a University setting can be Schedule Driven – a factor which can have a tremendous impact on how decisions are made, and what factors need to be taken into consideration when making those decisions. This was particularly evident in statements regarding scope additions on the Nuevo West project.

Similarly, comments around CPMs business decisions regarding Sole Sourcing were skewed by opinion, pointing out only the negative aspects of incorporating work via Change Order to entities already working on site. Ignoring advantages such as: efficiency, economies of scale, effective use of exiting/on-site resources, site/project logistics, schedule, learning curve, etc… We agree that scope that is CLEARLY distinct from the original scope needs to conform with UCOP policy. However, the issue as to whether scope is distinct, and/or related to the base project is never as black and white as the report seems to indicate. The determination on how to accomplish Change on any project is <u>always</u> evaluated against UCOP policy and how the specific change is (or isn't) related to the original scope and documented in the Sole Source Justification form.

Regarding project contingencies the Risk Statement/Effect leaves the impression that little effort is put into the development of said contingency. However, though the select sampling did not include specific evidence of the rigor surrounding the development of project contingencies, we provided several examples of VERY detailed Risk Analysis performed on other projects. Specifically, we provided a Value Based Risk Analysis that was accomplished on the Jacobs Medical Center, and a detailed listing of specific project risks that were identified, and incorporated into, the Hillcrest Phase One GMP – both of which provided evidence contrary to the Risk Statement but unacknowledged.

Finally, though we have had repeated discussions around this topic, the issue regarding IDC for Nuevo West is extremely mis-leading. On multiple occasions we informed Deloitte that IDC, though included in our overall budgets, funding is never transferred to the Plant Account and, therefore, will NEVER show as expended. Therefore, it should not have been included as a finding, or an issue, in the final report

Hoping that the above summary comments will provide some much needed context to the overall audit and the recommendations responded to below. Our response includes an outline of those specific items that were not revised; dates to complete the management action plan items; and our formal response to the recommended items we did not agree on.

Requested revisions/additional information to inaccurate statements

A. Budget Development and Management – Detailed Discussion, Page 9
Response to statement at top of page 9: Keep in mind that final budgets are developed, and approved, at Design Development - meaning that budgets need to provide for potential cost exposures for areas of the project that are not fully designed. This can be handled in multiple ways: 1) Add contingency to the actual Construction Cost line item; 2) Adding costs for those undefined elements in the Contingency Line item; 3) Occasionally, by providing "buffers" within Category 8 - Special Items. CPM looks at the final budget as a GMP contract with the Campus/Regents. In short - we are tasked with delivering the project at, or below, the Overall Budget. Similar to a true GMP, we are not guaranteeing each line item. Therefore, as the project becomes more and more defined, monies necessarily flow between line items

Page 9, *A notable case was on the Nuevo West Graduate Student Housing project where the Special Items budget included $16.65 million in costs, including a single line-item cost of $14.51 million for "interest during Construction".*

Please remove this statement. We have, on multiple occasions, explained that IDC is captured in the CIB but NEVER expended as part of the capital process. Leaving this statement is extraordinarily misleading and a misrepresentation of a commonly understood process.

B. Project Change Orders for Infrastructure Upgrades – Detailed Discussion, Page 11

Discussion: The new scope was not accurately estimated and went to bid as a fixed price contract based on design-development-level documents; despite the incomplete and uncertain nature of the scope, the scope was bid on a lump sum basis and bid-build delivery, compensation and delivery methods commonly associated with complete designs.
Response: Though discussed at multiple points in this process, the auditors fail to recognize the importance of a Fall opening for Housing projects...meaning schedule here is paramount. In this case, adding the scope and not delaying the opening of the project meant going to bid (knowingly) with Design Development level documents so as to expedite the delivery. This approach is not at all uncommon in this industry, if the implications are carefully weighed against the benefit of time.

E. Change Management – Detailed Discussion, Page 16

Discussion: Additionally, there were no change-order specific exemptions to Article 7.3 indicated for the sample of change orders reviewed.

Response: There is an exception check box on CP/FOs for Article 7 that is used by the PMs to indicate that a business decision has been made to knowingly waive the specifics of Article 7.

Management Action Plan Response (Items C, E, F)

C. Preliminary Cost Estimating

Response to Observation: Project Charters were developed as a Decision Making tool and have never been promoted as "estimates". They are intended to be fast, loose, and roughly in the ballpark of time and cost. They are effective in no small part due to the speed with which they are developed. If Charters are desired to be more precise, thorough, or estimate-like, this will require more time and much greater cost to develop - essentially defeating the very reason for their creation. Much time has been devoted to the understanding, use, and limitations of project charters. Additionally, we have developed check in points during the course of design for projects where charters have been approved.

Management Action Plan #1: Complete and ongoing

Management Action Plan #2: Complete and ongoing

Management Action Plan #3: Complete and ongoing. Please note that the projects under review/discussion in this document were managed when the organization was divided into two, Design & Development Services (DDS) and Capital Project Management (CPM). At that time, DDS was responsible for the preparation of the charters and then the project was transferred to a CPM project manager. The two organizations have since been reunited into one and the recommendations already implemented.

E Change Management

Management Action Plan #1: Complete and ongoing

Management Action Plan #2: Review and update change order review checklist; Reinstate training for new and existing project managers; complete by December 31, 2023

Management Action Plan #3: Develop guidelines for use of Change Proposals and Field Orders. Complete by ~~April 30, 2023.~~ September 30, 2023

F. Project Controls, Key Performance Indicators, Tracking and Reporting

Management Action Plan #1: In progress. More training required for PMs in the maintenance and use of eBuilder. Leadership to re-evaluate dashboard fields to determine most relevant criteria. Complete: ~~May 30, 2023~~ October 31, 2023

Management Action Plan #2: In progress. More training required for PMs in the use of the “Projected Budget” when forecasting. ~~Complete April 30, 2023 and on-going~~. Develop help guide and provide training by September 30th and ongoing.

CPM Response to Recommendations (Items A, B, D)

A. Budget Development and Management

Response to Observation Statement: Budgets are developed attempting to strike the balance of "not too aggressive" nor "too conservative", using a combination of historical data, experience, and site specific knowledge.

Response to Risk Statement/Effect: Speculation regarding budgets being "higher than necessary" should be qualified opinion, or speculation.

Response to Recommendation A.1 and A.2: Continue to be fully transparent with stakeholders and leadership in the development of budgets and the approval strategy for budgets, i.e., gain agreement on specific budget approach for high visibility projects – aggressive vs conservative. Project managers need to maintain autonomy/freedom to manage projects to the bottom line. In progress and on-going.

B. Project Change Orders for Infrastructure Upgrades

Response to Observation Statement: …*were inappropriately processed as substantial change orders…* This, again, appears as a statement of fact when, in truth, is opinion. Each Change Order greater than $100,000 attaches a sole source justification, wherein the project manager reviews the criteria for significant change and provides rationale meeting the UCOP criteria.

Response to Risk Statement/Effect. This statement ignores the benefits/advantages of Sole Sourcing when determined to be appropriate. Benefits: Utilizes work forces already on site; avoids a new mobilization; expediency/schedule; site/project specific knowledge; economies of scale.

Response to Recommendation B.1. Exists today as a process. The disparity comes, here, not in the process, but in the more subjective determination about relationship to the existing scope of work.

Response to Recommendation B.2. This program exists today and is utilized when appropriate

D. Risk Management and Contingency Development

Response to Observation Statement: An over generalization. CPM delivered at least two different approaches to identify and address potential risks to a project. Specifically, the Value Based Risk Analysis performed on JMC and the thorough analysis of potential risks associated with Hillcrest Phase One. Additionally, we informed the Auditors that risks are always analyzed, and often included, within the body of a GMP - meaning that all known risks are provided for within the body of the contract - not reliant upon contingency outside the contract.

Response to Risk Statement/Effect: See Above.

Response to Recommendation D.1: Though the report fails to recognize the risk items are most often included within the elements of a GMP, we can still be more proactive and structured in response to this recommendation. We will more broadly socialize and educate our staff on the

various tools and processes available to them in our efforts to provide more consistency here.
Complete September 30, 2023
Response to Recommendation D.2: Similar response to D.1. We will be re-educating PMs on the value/necessity of formal Value Based Risk Analyses and other similar approaches to surface and document specific project risks.

ATTACHMENT C – AMAS Comments on Management Response

We would like to thank the Construction Project Management (CPM) team for their Management Response dated February 3, 2022 to the audit of Construction Project Management (2022-01). One of the primary reasons that Audit & Management Advisory Services contracted with Deloitte was to ensure that we leverage the perspective of audit professionals who have broad Construction industry expertise to complete an audit of UCSD's construction processes and procedures. During the course of the review we have consulted with both Deloitte and CPM management regarding the report findings and recommendations and feel that the final report provides a balanced discussion that incorporates Deloitte's independent observations, our perspective as the University's internal audit function, as well as CPM's feedback those observations. Although CPM disagreed with certain findings, we stand by the Conclusion and Findings in the report.

We also wanted to take the opportunity to address some comments in the Management Response that we feel may be inaccurate, or incomplete and not reflective of the overall position in the report. Our specific comments are as follows:

- Throughout the Management Response, there were several comments regarding the Risk Statement/Effect sections of the observations, which indicate that CPM may not be familiar with the purpose of those statements. The Risk Statement/Effect is not intended to reflect an actual occurrence, is intended to give the reader an idea of the potential impacts to the University if the observed control weakness is not addressed going forward. These statements are not intended to be interpreted as conclusionary statements. We believe that this misunderstanding addresses most of CPM's comments and concerns regarding the Risk Statement/Effect sections. Additionally, we noted one of the passages that CPM objected to (Management Response p. 1, line 9) regarding 'overly conservative' budgets does not appear in the last version of the report shared with management.

- The second paragraph of the Management Response indicates: "Also of note, there appeared to be a general reluctance within the audit findings to incorporate any acknowledgement that projects within a University setting can be Schedule Driven – a factor which can have a tremendous impact on how decisions are made, and what factors need to be taken into consideration when making those decisions." Similarly, a comment under section B on page two indicates "Though discussed at multiple points in this process, the auditors fail to recognize the importance of a Fall opening for Housing projects...meaning schedule here is paramount." We disagree with these statements, as the report makes several references to schedule pressures as contributing factors on pages 11 and 12. We maintain that despite schedule pressures, controls can be improved to better document business decisions and compliance with policy.

- The third paragraph of the Management Response referenced Sole Sourcing and Change Order decisions discussed in Finding B of the report. AMAS stands by the finding that in these cases the scope of the change was distinct, and therefore use of the change order process was not in compliance with policy.

- The fourth paragraph of the Management Response asserts that management provided examples of risk assessment documents which were not acknowledged in the audit. In fact, we

do acknowledge that these documents were provided (report page 15), however evidence of similar risk assessments were not present for the sampled projects.

- The Management Response p. 2, Section A indicates:

  > "Page 9, *A notable case was on the Nuevo West Graduate Student Housing project where the Special Items budget included $16.65 million in costs, including a single line-item cost of $14.51 million for 'interest during Construction'.*
  >
  > Please remove this statement. We have, on multiple occasions, explained that IDC is captured in the CIB but NEVER expended as part of the capital process. Leaving this statement is extraordinarily misleading and a misrepresentation of a commonly understood process."

  In response to CPMs feedback, we specifically added a sentence immediately following that passage which states: "We understand that the 'Interest During Construction' line item was added to the budget by Capital Planning, and that those costs were not actually incurred during construction." We feel that this sentence provides clarification and the paragraph is factually accurate.

- The Management Response pages 2-3 asserts that "There is an exception check box on CP/FOs for Article 7 that is used by the PMs to indicate that a business decision has been made to knowingly waive the specifics of Article 7." However, this check box was not present on the forms provided for the projects sampled in our review.

We also appreciate CPM's agreement to the Management Action Plan items as noted on page 3 of the Management Response). We will follow-up with CPM management at the appropriate time to confirm implementation of those items.

For other items where CPM disagreed with findings and will not implement audit recommendations (Management Response pages 4-5), management accepts the risk associated with the control weaknesses identified.